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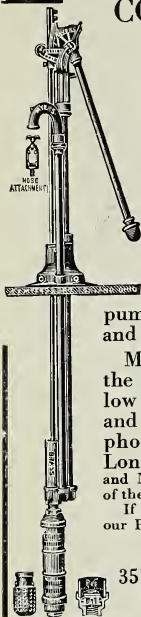


Gleanings in Bee Culture



MYERS

COG - GEAR PUMPS

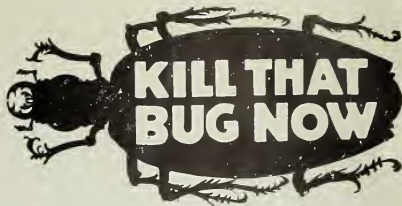


Did you ever wish for a pump that would throw more water than your old one which slowly fills the water-pail? MYERS COG-GEAR PUMPS will do it, for they save one-third of the operating power. You can use a larger cylinder and pump three gallons while you were pumping two with the old pump and with no more effort.

MYERS PUMPS are made in the force and lift styles for shallow and deep wells, and for hand and windmill operation. The Siphon Spout, Large Air-chambers, Long Set Length, Adjustable Base, and Non-corrosive Glass Valve-seat are some of the other improvements.

If you use a pump of any kind, write for our Pump Booklet.

F. E. MYERS & BRO.
351 Orange St., Ashland, Ohio
Ashland Pump and Hay Tool Works



DO it before it ruins your crop prospects. Timely spraying will kill off the destructive insects—banish the blights. *Spraying pays.* Invest money on your spraying outfit, too. We can save you one quarter to one-half on any kind of sprayer, hand or power. Look at this one, for instance—

Newcomer Barrel Spray

Can Be Used \$6⁴⁵
With Any Barrel

If you bought it in the ordinary way it would cost you between \$10.00 and \$12.00

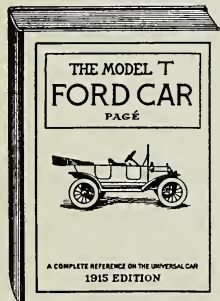
For various kinds of spraying—orchards, vineyards, shrubbery or for whitewashing dairies, poultry houses, etc. Double acting—brass nozzles—brass cylinder—brass valves—brass valve seat—paddle agitator. Furnished with 5-foot hose. Built to last for years—guaranteed to give satisfaction.

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Address house most convenient

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The Model T Ford Car

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This is the MOST COMPLETE and PRACTICAL instruction book ever published on the FORD CAR. A high-grade cloth-bound book printed on the best paper, illustrated by specially made drawings and photographs. All parts of the Ford Model T Car are described and illustrated in a comprehensive manner—nothing is left for the reader to guess at. The construction is fully treated and OPERATING PRINCIPLES MADE CLEAR TO EVERY ONE. Complete instructions for driving and repairing are given. Every detail is treated in a non-technical yet thorough manner.

This book is written specially for FORD DRIVERS AND OWNERS, by a recognized automobile engineering authority and an expert on the FORD, who has driven and repaired Ford Cars for a number of years. He writes for the average man in a practical way from actual knowledge. All parts of the Ford Model T Car are described.

The illustrated chapter on repairing and overhauling alone is worth many times the price of this book. Special description of book sent on request.

Gleanings in Bee Culture, 1 Year, \$1.00

The Model T Ford Car, . . . 1.00

Both \$1.50

Gleanings in Bee Culture, Medina, Ohio

Canadian postage, 30c extra; Foreign postage, 60c extra

EMBARGO ON BEE SUPPLIES

Pennsylvania, New Jersey, New York, and New England states beekeepers should not delay putting in their stock of supplies as early as possible. The eastern railroads are so heavily laden with freight it is indefinite as to just how long it will take to receive goods after they leave the factory or dealer. Ordering your requirements a month earlier than usual will cost no more, and will assure you of having supplies on hand when the time comes to use them. This will allow for any delay which might occur while in transit.

As never before we are especially prepared to take care of the beekeepers' orders and give prompt service. Above all, we assure the purchaser of satisfaction, and we never consider a deal closed until we feel sure our customer has received the guarantee of satisfaction which goes with every package, crate, or box leaving our factory.

Those beekeepers who have not received a copy of our new RED CATALOG should not hesitate to send for a copy. It gives descriptions and prices of all the beekeepers' supplies, from the requirement of the smallest to that of the largest beekeeper. A post card will bring it to your address free.

Red Catalog, postpaid.

Dealers Everywhere.

"Simplified Beekeeping," postpaid.

W. T. FALCONER MFG. COMPANY, FALCONER, NEW YORK

where the good beehives come from.

HONEY GRADING RULES

GRADING RULES OF THE COLORADO HONEY-PRODUCERS' ASSOCIATION, DENVER, COL.,
FEBRUARY 6, 1915.

COMB HONEY.

FANCY.—Sections to be well filled, combs firmly attached on all sides and evenly capped except the outside row next to the wood. Honey, comb, and cappings white, or slightly off color; combs not projecting beyond the wood; sections to be well cleaned. No section in this grade to weigh less than 11 oz. net or 13½ gross. The top of each section in this grade must be stamped, "Net weight not less than 12½ oz."

The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER ONE.—Sections to be well filled, combs firmly attached, not projecting beyond the wood, and entirely capped except the outside row next to the wood. Honey, comb, and cappings from white to light amber in color; sections to be well cleaned. No section in this grade to weigh less than 11 oz. net or 12 oz. gross. The top of each section in this grade must be stamped, "Net weight not less than 11 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

NUMBER TWO.—This grade is composed of sections that are entirely capped except row next to the wood, weighing not less than 10 oz. net or 11 oz. gross; also of such sections as weigh 11 oz. net or 12 oz. gross, or more, and have not more than 50 uncapped cells all together, which must be filled with honey; honey, comb, and cappings from white to amber in color; sections to be well cleaned. The top of each section in this grade must be stamped, "Net weight not less than 10 oz." The front sections in each case must be of uniform color and finish, and shall be a true representation of the contents of the case.

Comb honey that is not permitted in shipping grades

Honey packed in second-hand cases.

Honey in badly stained or mildewed sections.

Honey showing signs of granulation.

Leaking, injured, or patched-up sections.

Sections containing honey-dew.

Sections with more than 50 uncapped cells, or a less number of empty cells.

Sections weighing less than the minimum weight.

All such honey should be disposed of in the home market.

EXTRACTED HONEY.

This must be thoroughly ripened, weighing not less than 12 pounds per gallon. It must be well strained, and packed in new cans; sixty pounds shall be packed in each five-gallon can, and the top of each

five-gallon can shall be stamped or labeled, "Net weight not less than 60 lbs."

Extracted honey is classed as white, light amber, and amber. The letters "W," "L A," "A" should be used in designating color; and these letters should be stamped on top of each can. Extracted honey for shipping must be packed in new substantial cases of proper size.

STRAINED HONEY.

This must be well ripened, weighing not less than 12 pounds per gallon. It must be well strained; and, if packed in five-gallon cans, each can shall contain sixty pounds. The top of each five-gallon can shall be stamped and labeled, "Net weight not less than 60 lbs." Bright clean cans that previously contained honey may be used for strained honey.

Honey not permitted in shipping grades.

Extracted honey packed in second-hand cans.

Unripe or fermenting honey weighing less than 12 lbs. per gallon.

Honey contaminated by excessive use of smoke.

Honey contaminated by honey-dew.

Honey not properly strained.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES

Adopted at Cincinnati, Feb. 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH.

1. *Extra Fancy.*—Sections to be evenly filled, combs firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than six unsealed cells on either side, exclusive of the outside row.

3. *No. 1.*—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2.*—Combs not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR.

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT.

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY.

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour, or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

MATANZAS.—Honey is now selling at 45 cents per gallon in this city.

Matanzas, April 24.

ADOLFO MARZOL.

ST. LOUIS.—Our local demand for honey is very light, with ample supplies. Altho quotations remain unchanged since our last letter, they are only nominal. We quote southern strained bright amber in barrels, 5 to 5½; in cans, 6 to 6½; dark, ½ to 1 ct. per lb. less; comb honey, amber, 10 to 12; dark and inferior, 9 to 11; broken and leaky, 7 to 8; fancy clover from 14 to 17; western comb honey in neat clean cases, fancy clover, \$3.25 to \$3.50; bright amber, \$2.50 to \$3.00; under grades less. Prime beeswax, 29 ½ cts.; impure and inferior, less.

St. Louis, May 6. R. HARTMANN PRODUCE CO.

CHICAGO.—There is very little movement in honey of any kind at the present time. Comb honey drags, and prices are quite uncertain. Extracted remains steady without any change in price from our recent quotations. Beeswax sells at 30 to 32 upon arrival, if yellow and free from sediment.

Chicago, May 3.

R. A. BURNETT & CO.

BUFFALO.—There is some improvement in the demand for white-clover honey. Other grades and extracted are selling slow. Stocks are not heavy, and we think white comb will clean up soon. No. 1 to fancy white clover in sections is selling at 15 to 17; white extracted, 8 to 10; amber, 5 to 6; dark, 5 to 6 if good and pure. Buckwheat, about 7 to 7½. Beeswax, 28 to 30.

Buffalo, May 9.

W. C. TOWNSEND.

KANSAS CITY.—The honey market seems a trifle better on extracted honey, but there is no change in prices. We quote No. 1 white comb, 24-section cases, \$3.00; No. 2 ditto, \$2.50 to \$2.75; No. 1 amber ditto, \$2.75 to \$3.00; No. 2 ditto, \$2.50 to \$2.75; white extracted, per lb., 7 to 7½; amber ditto, 5½ to 7; No. 1 beeswax, 28; No. 2, 25.

C. C. CLEMONS PRODUCE CO.

Kansas City, May 5.

NEW YORK.—There is no demand for comb honey to speak of; and while No. 1 and fancy white are cleaned up, there is quite a stock of off grades still on the market, for which there is practically no demand, and hard to dispose of. The market on extracted honey is in a little better shape, and prices now show an upward tendency, especially on fancy West India honey. Supplies are sufficient to meet all demands. Beeswax is steady at from 29 to 31, according to quality.

New York, May 8.

HILDRETH & SEGELKEN.

DENVER.—Local demand for comb honey light with ample supply. We are selling in a jobbing way as follows: No. 1 per case of 24 sections, \$2.93; No. 2, \$2.70. White extracted, 8½ to 8¾; light amber, 8 to 8¼; amber, 7 to 8. We pay 26 cts. per lb. in cash and 28 cts. in trade for clean yellow beeswax delivered here.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION.
Denver, May 6.

F. Rauchfuss, Mgr.

ZANESVILLE.—There is no particular change in the honey situation here, the demand being about normal for the season, and prices practically unaltered. In a small way best white comb brings around \$4.00 a case. Some western sells for \$3.75. Jobbers are allowed usual trade discount. Extracted is in limited demand at prices as heretofore, 9 to 10 cts. for best white; darker grades correspondingly less. For good clean beeswax we pay producers 29 cts. cash, 31 trade, and invite shipments on this basis.

Zanesville, May 6.

E. W. PERCE.

Watchful Waiting Causes You to Get Left

So Buy your Bee Supplies Now.

Promises to be a Honey year. Ship on day of receipt of order.

Lewis' Beeware—finest in the world.

Send for our 1916 Catalogue.

We do Beeswax rendering. Ship us your old Combs and Cappings. Write for prices.

THE FRED W. MUTH CO.

204 Walnut St.

THE BUSY BEE MEN.

CINCINNATI, O.

STOP! LOOK! READ!

MARCHANT'S FAMOUS 300-POUND BREEDERS are now being bred in Florida during our honey harvest, and every beekeeper knows the best queens are reared during the honey harvest. Our 300-pound breeders are still holding their own.

When you order Bees and Queens from us you get **QUALITY, PURITY, AND HONEY-GATHERERS**. We can fill your orders from the above famous strain for Queens, Bees, Nuclei, and Full Colonies promptly, or at such time as the purchaser may desire, and guarantee safe delivery and entire satisfaction to you in every respect. Our aim is to give you the best stock on the market at the time you want it. We ask you to give us a trial and let us prove to you that everything we claim for our bees is true. We will ship from Florida until May 20; after that date from Canton, Ohio. Prices as follows:

ISLAND-BRED ITALIAN QUEENS.

Shipments begin March 1.

| | 1 | 6 | 12 |
|------------------|--------|---------|-------|
| Untested | \$1.50 | \$ 7.50 | 12.00 |
| Tested | 2.00 | 10.50 | 18.00 |
| Select Tested .. | 3.00 | 15.00 | 24.00 |

Tested Breeding Queens,
\$5 and \$10 each.

PRICES ON BEES BY THE POUND F. O. B. SHIPPING POINT. Shipment begins May 10.

| | 1 | 6 | 12 |
|--------------|--------|---------|---------|
| 1/2-lb. | \$1.50 | \$ 7.50 | \$12.00 |
| 1-lb. | 2.00 | 10.50 | 18.00 |
| 2-lbs. | 3.00 | 15.00 | 27.50 |
| 3-lbs. | 4.00 | 21.00 | 36.00 |
| 5-lbs. | 5.50 | 27.50 | 50.00 |

(These prices are without Queens)

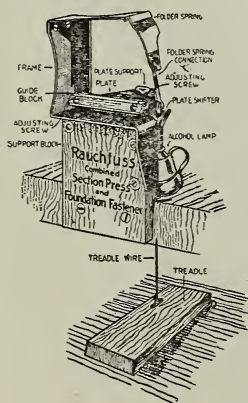
Prices on Nucleus and Full Colonies without Queens. Shipping Now.

| | | | | | |
|----------------------|--------|-----------------------|--------|----------------------|---------|
| One-frame Nucleus... | \$2.00 | Three-frame Nuclei.. | \$4.00 | Eight-frame Colony. | \$ 8.50 |
| Two-frame Nuclei.... | 3.00 | Five-frame Nuclei.... | 5.00 | Ten-frame Colony.... | 10.00 |

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Comb-honey producers can put up their sections complete in less than half the time with a **RAUCHFUSS COMBINED SECTION-PRESS AND FOUNDATION-FASTENER**. Now used by hundreds of Western beekeepers who would not think to be without it any more.

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Beeswax wanted, cash or in trade.

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Gleanings in Bee Culture

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Stock contains most of the new things listed, and other standard things used by beekeepers. Here is a few of my reductions while they last:

Wisconsin 8-frame 1½-story hives . . \$1.50
 Wisconsin 10-frame 1½-story hives . . 1.75
 Dovetailed 10-frame 1½-story hives . . 1.80
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Send for catalog, also a list of what you want so I can price it for you. Dadant's Foundation at satisfactory price.

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We have bred queens over 25 years, and have hundreds of customers who will testify to the quality of our queens. We haven't any disease among our bees and never have had. Our prices are as follows: Untested queens, \$1.00 each; \$10.00 per dozen. Tested, \$1.25 each; \$12.00 per dozen. Select tested, \$2.00 each; \$20.00 per dozen. Breeding queens, \$5.00 each. Special prices on large orders. Our customers must be pleased. Safe arrival guaranteed. Send check with orders to

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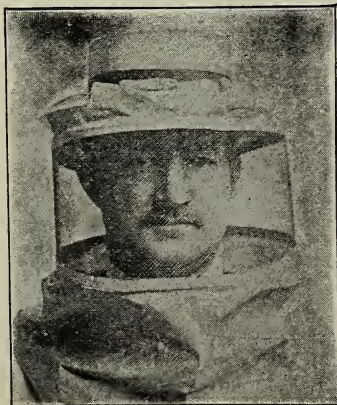
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Muth's Ideal Bee-veil, postpaid 75c;
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OLD COMB AND CAPPINGS rendered
 into wax with our hydraulic wax-press.
 Perfect work. We buy your wax at high-
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 204 Walnut Street Cincinnati, Ohio

Gleanings in Bee Culture

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Established 1873

A. L. BOYDEN, Advertising Manager

Issued semi-monthly

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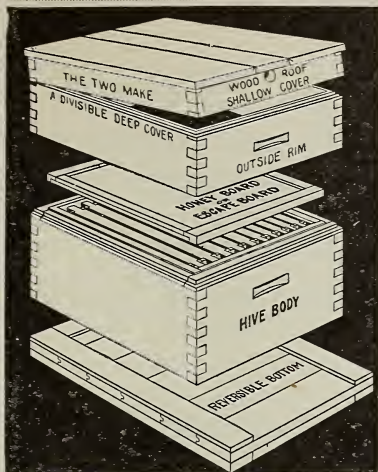
Columns to page, 2 (regular magazine page).

Forms close 10th and 25th of each month.

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DADANT & SONS, Hamilton, Ill. Dear Sirs:—The box of foundation arrived a few days ago in fine condition. I have kept bees for over thirty years, and have purchased foundation from many firms, and must say that your foundation is the nicest that I have ever used, and I wish to thank you for the prompt shipment and large amount of wax you secured for me.

A. W. DARBY, Alburg, Vt., May 3, 1916.

We have forty years' experience and thousands of satisfied customers. Are you one of them?

Dadant & Sons, Hamilton, Illinois

GLEANINGS IN BEE CULTURE

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NO. 10

EDITORIAL

Our Cover Picture

OUR cover this issue, also the picture p. 396 show Mrs. Susan E. Howard, a Massachusetts woman who has demonstrated that a woman can make beekeeping pay. Besides writing for GLEANINGS, she contributes to some of the popular magazines.

Thru a misunderstanding, we omitted to credit the picture of J. W. Schlenker and his auto, that appeared on our cover last issue, to *Productive Beekeeping*, by Frank C. Pellet. When we received the picture we overlooked the fact that it had already been used by Mr. Pellet. This breach of editorial etiquette was, of course, unintentional, and our apologies are due Mr. Pellet and the publishers, J. B. Lippincott Co.

A Correction

THRU an error we inadvertently made J. L. Byer say in his department in the May 1st issue, that, during the first twenty-four days of March, the temperature in his locality was fourteen degrees below zero. What he really did say was that during the first twenty-four days of the month there were fourteen days when the temperature was below zero. The mistake is our own, and Mr. Byer is in no way to blame for the exaggeration.

Honey-crop Prospects; the Need of Preparedness

THERE has been a heavy flow of honey in Texas, but the season has been a "little off" for sage in California. Prospects in Colorado and other alfalfa districts are good. Clover prospects in this locality, and in most places from which we have had reports, were never better. The indications are the best we have had for years for a favorable season thruout the United States

with the exception as noted. But we have had these "good indications" before. While "there's many a slip 'twixt cup and lip," it behooves every beekeeper to be prepared. There never was a time in all our history when preparedness seemed to be more important than right now in the beekeeping world. Many a crop has been lost because the beekeeper was not ready.

Bees Profitable in Canada

IN an interesting article entitled, "One Man Who Found His Answer in the Soil," which has been running in the February and March numbers of the *Countryside Magazine*, Mr. Justus Miller tells of the experiences of Mr. F. W. Krouse, of Guelph, Ontario, in getting a start in beekeeping. Says Mr. Krouse, "It was with bees that I had the time of my life! With them I have finally been most successful." The net receipts from Mr. Krouse's farm for last season were as follows:

| | |
|----------------------------|-----------|
| Honey | \$3530.00 |
| Poultry | 100.00 |
| Asparagus | 500.00 |
| Cherries | 200.00 |
| Berries and Currants | 75.00 |
| Potatoes | 500.00 |
| Total..... | \$4905.00 |

The bees, as this table shows, produced 72 per cent of the entire earnings of the farm.

Yellow Annual Sweet Clover

ALL the sweet-clovers are honey-plants. Two of them, white biennial and yellow biennial, are common in the greater part of the country; but the small yellow annual variety, *Melilotus indica*, is seldom considered of much value except in southern California where it is grown in orchards as a

cover crop and is used as a green manure to be plowed under before spring sowings.

A short bulletin entitled *Melilotus indica* (Circular No. 126), summarizing facts about sweet clover, and giving directions for inoculation and preparing the seed-bed, has been published by the Agricultural Experiment Station, Berkeley, Cal. It may be obtained free of charge by those interested.

Lots of Reading on Bees

"READ the books on beekeeping" is a frequent word of advice to men taking up the work. Very good; but it should not be carried out literally, of course. The simple fact is that if a man were to read all the books he can read on this absorbing subject he would have no time to do anything else for the rest of his life.

The experts of the apicultural laboratory of the Department of Agriculture, Washington, have compiled a bibliography of all known works on bee culture. The number of books listed up to date is 2295. It would take an entire issue of GLEANINGS to print this list once, assuming that each title took two lines of print.

Besides this list of books the laboratory also has a bibliography of articles and other contributions to the science, much greater in extent. Together with the list of books this numbers 22,440 titles, approximately.

Photographs for Reproduction

SCARCELY a week passes that we do not receive photographs submitted for publication in GLEANINGS that are so poor that one can hardly distinguish the details in the photograph itself. Of course, in the process of making an engraving some of the detail is lost, and in printing there is a still further loss. Consequently, a photograph suitable for reproduction must be very good indeed.

As we have stated before, we receive far more photographs than we can possibly use. Ordinarily, we prefer those which are instructive, or which are necessary to illustrate some point in an article.

Lately we have received several photographs from different parties that were almost ruined by pencil-marks made on the back with a hard pencil, the indentation of which showed on the face of the picture. We always like to have the name and address written on the back of the photograph; but in doing this one should use a pen or soft pencil, and lay the picture on something hard. If a hard pencil is used, and the photograph lies on a blotter, for

instance, every mark shows thru. No writing of any kind, either with pencil or pen, should be done on the face of the picture.

Bee Inspection in Connecticut

In a small state the problem of eradicating bee diseases is just as important as in the larger states, altho the smaller area to be covered reduces traveling expense so that the cost of inspection can be kept low.

In Connecticut there are two inspectors—H. W. Coley, of Westport, who has the four southern counties, Fairfield, New Haven, Middlesex, and New London, and A. W. Yates, of Hartford, who has the four northern counties, Litchfield, Hartford, Tolland, and Windham. The inspectors have the situation well in hand, according to the report of the Connecticut Agricultural Experiment Station for 1915. European foul brood is the disease found most frequently, altho there is some American foul brood as well as sacbrood. In 1915 a larger proportion of apiaries and colonies were found free from disease than ever before.

A summary of the inspection is as follows:

| | Apr. | Col. |
|----------------------------------|------|----------|
| Number inspected..... | 424 | 1494 |
| Infested European foul brood.... | 129 | 441 |
| Per cent infested..... | 26.1 | 10.3 |
| Infested American foul brood.... | 4 | 8 |
| Per cent infested..... | .8 | .18 |
| Pickled or sacbrood..... | 10 | 20 |
| Average No. colonies per apiary. | | 8.58 |
| Cost of inspection..... | | \$746.31 |
| Average cost per apiary..... | | 1.51 |
| Average cost per colony..... | | .175 |

Favorable Spring for Bees

WHILE the spring is a little late, and fruit-bloom has been delayed, the conditions were never better for bees. With the exceptions noted in our last issue, bees have wintered unusually well. While the spring has been backward it has not been such as to cause serious spring dwindling. In fact, none has been reported. The very fact that fruit-bloom has been delayed by the inclement weather makes it apparent that the bees will have a good chance to get at the blossoms without spells of bad weather shutting them off. When trees come into bloom in April in our locality, it means that the bees may not have more than a couple of hours' work on the blossoms. But here it is May 8. Cherry-trees have just opened, and fruit-trees are just starting. One of our colonies, according to one of the bee-inspectors, Mr. A. C. Ames, has already 15 lbs. of new honey; and others have quite a sprinkling all

thru the hives. This will mean a tremendous boost to brood-rearing, and, in the case of the stronger colonies, swarming.

Short Course for Beekeeping at the Massachusetts Agricultural College

WE desire to call especial attention to the photograph on page 398 of the class in beekeeping at the Massachusetts Agricultural College, while on an excursion to the historic apiary where Langstroth carried on his experiments. This class has proven very popular; and with so good a man as Dr. Gates in charge, it is no wonder. Those who are able to profit by this opportunity should be congratulated on being able to take advantage of such instruction.

A general announcement of this Short Course appeared on advertising page 18 of our last issue. Those desiring to enroll in this class must register early, since the number that can be accommodated is limited. If there is a large attendance the work has to be divided up, making it difficult to handle the students. Fifteen is the preferred number.

"Near" Honey

SOME time ago our attention was called to an advertisement of a recipe for a honey substitute. With our anticipations running high, we sent our five two-cent stamps and received the following, written in pencil:

"A good recipe for an article resembling honey, but not honey, is made by taking glucose and reducing it to the consistency of strained honey. When cool, add one dram of pot. alum to the gal., first dissolved in a small portion of the dilute glucose. Add a small portion at a time of rose flavoring extract until the mixture has the right flavor."

We wonder what the "right flavor" would be in this case. Probably the first small portion would give a flavor about right for clover or sage honey, the second for basswood, third for aster, and so on up to buckwheat. We wonder how many more small portions would have to be added to make chincapin honey!

Beekeeping in the South Atlantic States, Again—a Correction

A CORRESPONDENT, referring to our report of Dr. Phillips' address in our April 1st issue, page 259, regarding box-hive beekeeping in the south Atlantic states, complains that not all the beekeepers in this portion of the country are in the box-hive

class—that there are many progressive and up-to-date beekeepers there.

It is but fair to say that Dr. Phillips in his address at the Chicago convention went on to state that some of the best beekeepers in the country were located in that portion of the Southland, and that what he was about to say represented only those beekeepers up in the mountain districts and other portions of the state remote from towns and cities. The omission, therefore, was no fault of Dr. Phillips, but, rather, our own. Our apologies are due, therefore, to our correspondent, and to Dr. Phillips in particular.

Locating Outyards; the Importance of Shrubbery or Trees

AT this time of the year many outyards will be located; and it is important to place them where the individual hives will be screened from each other. When all the hives are placed out in the open, every hive is in plain view of every other one, cross bees are more inclined to follow their owner all over the yard. Experience has shown over and over again that an outyard of bees located in the midst of shrubbery will be comparatively tractable, while the same yard of bees, when put into an open yard may become cross.* The reason of this is very plain. When the operator or the hives are screened from general view these stray angry bees lose sight of the operator as he moves about, with the result that he can work all day in quiet without a veil, and with very little smoke. It is probable that the vision of bees at close range outdoors is not very good; at all events, it is very easy to dodge them. We have frequently, when followed by angry bees, merely stepped behind a bush or a tree, and then gone on to another portion of the lot unmolested.

Of course, it is not always practicable to locate apiaries in favorable spots, and one is compelled to take what he can get rather than what he would like.

In locating one or two hives in a back lot in town, it is important to place these hives where the bees do not get a general view of the entire premises except as they fly up to go to the field. When out in quest of stores they are usually very quiet and gentle. Trouble between neighbors can very often be averted by so placing the hives that the surroundings will be of the character we have described.

* Over and over again we have discovered that the same bees that were gentle at the home yard, where each hive is behind a trellis of grapevines, would often be mean to handle at outyards placed out in the open, where every hive is in view of the other.

Self-Sterility of Sweet Cherries; the Value of Bees as Pollinators

THE following from the *Fruit Grower* of St. Joseph, Mo., April 1, 1916, is both interesting and valuable. Statements of this kind are not prejudiced in favor of the bees, hence are of all the more value.

It has become more and more apparent during the past few years that a number of varieties of sweet cherries grown commercially in Oregon failed to bear, from no apparent reason. This seeming mystery has attracted so much attention that finally it was decided by the state experiment station authorities to make some experiments to determine the cause, if possible. The first of these experiments was undertaken primarily for purposes of breeding tests, and the results obtained pointed so clearly to self-sterility that they were continued with the idea of testing the latter condition, rather than as a further breeding trial.

The experiments were conducted, both at The Dalles and Corvallis, with quite similar results in each case. It was found that for all practical purposes Bing, Lambert, and Napoleon (Royal Ann) were self-sterile. Cross-pollination was then tried, and they were found to be also inter-sterile. The fact which at first seemed to be somewhat mysterious, that this lack of fertility in the blossoms was apparently only of recent occurrence, was finally explained by noting that practically all the solid blocks of any size had been planted within recent years, and that the older orchards contained a greater number of varieties, including a few seedlings in most cases.

The most careful tests were made during three years, and the following conclusions were reached: It is necessary to set a number of varieties together in order to insure pollination that will produce a profitable setting of fruit. If there are a few trees of Black Republican, Black Tartarian, or even seedlings near the Bings, Lamberts, or Napoleons, they should be allowed to remain, and if necessary a few trees may be top-worked to these varieties in order to provide pollinators. If nothing better can be done until these latter can be secured, a number of large branches of these known pollinators may be cut and placed thruout the orchard in pails or kegs of water, just before the blossoms open. While this will not be likely to give a maximum crop of fruit, yet the results will probably be such as to make it profitable.

Probably about one tree in every six or eight, scattered thru the blocks of Bing, Lambert, or Napoleon, will be sufficient for the purpose of pollination. It should be remembered that the three varieties named are inter-sterile, as well as self-sterile. This means that they will neither pollinate themselves nor each other. Their pollen is not of itself sterile, for it will fertilize a num-

ber of other varieties, but is neutral when applied to any of the three named.

The method of fertilizing by means of seedling branches cut off and placed upright in receptacles of water thru the orchard, was tried by one grower in 1914, and the yield of his trees was increased to three times what it had been previously.

The importance of bees as agents for the dissemination of pollen cannot be over-emphasized. In the case mentioned a number of swarms of bees were placed thruout the orchard along with the seedling branches at blooming time. No matter what other favorable conditions are present for cross-pollination, it will not be effected unless bees or other insects are present to carry the pollen from tree to tree. There is no doubt that many cherry orchards that are now shy bearers could be greatly improved by the introduction of a number of swarms of bees.

As pollinators for the Bing, Lambert, and Napoleon, the Black Republican, Black Tartarian, and Waterhouse take first rank, but Elton, Wood, Coe, Major Francis, and Early Purple were also found to be good, altho somewhat variable in their results.

At least some of the sour varieties of cherries are capable of pollinating the sweet cherries. The ability of a variety of cherry to set fruit is not altogether dependent upon pollination. Soil and climatic conditions are also factors in the case. While, so far as we know, no experiments of this character have been made in the Middle West, it may be worth while to investigate along the lines mapped out by the Oregon station.

=====

An Unfortunate Theory; More Proof Needed

PROF. H. A. GOSSARD, Entomologist of our Agricultural Experiment Station, Wooster, Ohio, and one for whom we have a regard, has just issued a bulletin entitled "The Role of Insects as Carriers of Fire-blight." Since he attempts to prove that the honeybee is eminently injurious in spreading this disease, we desire to examine his arguments. In doing this the editor admits, of course, his prejudice in favor of the bee; but it is obvious that any attempt to incriminate the bee should be backed by proof; and in our opinion Professor Gossard has come short in furnishing such proof.

He begins by quoting extensively from a paper by Prof. M. C. Waite, of the Department of Agriculture, read before the National Beekeepers' Association (32d annual meeting, Buffalo, New York, September, 1901), in which this author gave his evidence that the honeybee can and does carry blight. The editor remembers this paper well, because he had the pleasure of

presiding at the National when this was read. The evidence presented by Professor Waite has been accepted by the beekeepers as conclusive because of its thoroughness. He called attention to the fact that flies, wasps, and other insects swarm over the exuding sap on hold-over cankers, and fly to the opening blossoms. So far we have seen no evidence that bees do this, the only previous claim of their part in carrying the disease being in conveying the blight organism from blossom to blossom.

Professor Gossard admits that weather conditions of the past few seasons in Ohio have encouraged the multiplication of aphids in early spring, and that these must play a large part in starting off the infection early in the season. He does not indicate why he thinks them instrumental simply in "starting off" the infection. Prof. J. H. Merrill, of the Kansas Agricultural Experiment Station, showed in a paper published in the *Journal of Economic Entomology*, August, 1915, Vol. VIII, p. 402, that a control of aphids by spraying with "Black-leaf 40" practically eliminated blight in Doniphan County, Kansas. Similar results have been obtained elsewhere. While other entomologists are rapidly vindicating the bee, our Ohio entomologist seems to be working on another line.

Professor Gossard also quotes from an article which he intends to publish in the *Journal of Economic Entomology*. In this he has proven the following points: The bacillus which causes fireblight has not been found in old honey in early spring nor in fresh apple honey, altho in one hive the bees were certainly working on blighted blossoms. When the bacteria were artificially placed either in sterilized or unsterilized honey, they lived for nearly two days, and it would seem that they are finally killed in honey, altho this is not clear in the paper. There is no reason to believe that they grow in honey, altho he thinks this might be possible.

These facts should satisfy any prejudiced defender of the bee, to whom Professor Gossard jokingly gives the name "bee monomaniac." Unfortunately the rest of the paper contains "inferences," "presumptions," and phrases like "it stands a good chance," "inferential evidence," and similar expressions which might lead one to believe that he is anxious to prove something on the bee. He even says, "In an attempt to connect definitely the hive," and in another place, "the direct evidence we are seeking, i. e., to prove the hive an infection center," are expressions which do not indicate the right scientific spirit. Bee-

keepers will not deny proven facts derogatory to bees, but we candidly are not in sympathy with attempts to secure proof to bolster up a preconceived idea.

Professor Gossard evidently thinks that the reason blight spreads so rapidly is that the bacteria are carried to the hive, accidentally distributed among the bees, and then carried out to thousands of blossoms. Evidently, if this is true the bee is more harmful than any other insect. Since he has no proof that this is the case, and since he never found the bacteria in the hive, the theory is as yet pure speculation.

The nature of the inferences will be evident from the following quotation: "We believe we have proved that if one bee carries 100,000 bacilli into the hive one day, that on the following one or two days each of 1000 bees has the possibility of carrying a considerable fraction of 100 virulent bacilli out to fruit-blossoms, because practically all the bees in the hive are at work during the night curing the honey." In reply to such speculation, let us speculate also that by the next day over nine-tenths of the contaminated honey is already eaten and digested, and surely Professor Gossard will not assume that the bacilli are filtered out. The rest is stored so that, while a bee may be contaminated, a "considerable fraction" of the organisms will have ceased to trouble the fruit-grower. It is very seldom that any fruit-bloom honey is stored. At that time of the year brood-rearing is nearly at its height, and practically all of the nectar gathered is used immediately. So far Prof. Gossard has not found the organism in the stored honey; and even when he introduced it artificially it did not live. His evidence is negative so far.

It would be possible to go thru the paper and point out many unproven suppositions and what appear to us to be unscientific conclusions—even in the face of the facts which are actually helpful to the beekeeper's estimate of his bees. The author says, "My purpose in investigating the hive has been solely with the object of emphasizing the need of cutting off the supply of blight organisms before they reach the hive." We could wish that his object had been solely to find out what part the bee and other insects play in carrying fireblight, and that he had carried out his investigations with a more open mind, and let the truth come where it may instead of putting himself in the position of "an attempt to connect definitely the hive." We hope, however, that he will not drop the problem until he has found out how much truth there is in his theory.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.



J. L. BYER, p. 349, says sweet-clover honey is very much inferior to alsike or white clover. May be, if pure. Here it gives a vanilla flavor to clover honey that is delightful. Too much of that flavor might be objectionable.

R. F. WIXON, p. 363, when settled weather comes, swaps an outside brood for an inside one, repeats it a week later, and in another week puts an empty comb in the center of the brood-nest. Now, I wonder what makes the difference; is it locality, bees, or what? If I should do that it would give a bad set-back. For the bees of themselves have all the brood they can cover, and spreading can cause only delay, unless it be chilled brood. Are there some bees that fail to have all the brood they can cover unless their combs are spread?

WHEN J. E. Crane finds a colony with larvæ in queen-cells, and the queen is old, he removes her and kills cells, kills them again 8 days later, and 8 days later still gives a virgin, p. 359. That leaves the colony 24 days or longer without egg-laying. I wonder if that time might not be safely shortened. How would it do to give a laying queen instead of a virgin? That makes only 16 days without eggs. Allen Latham, p. 363, gives a ripe cell at removal of queen. But he does that before cells are started, and sometimes the colony swarms later. I have generally had success by caging or removing the queen, killing cells at the same time, killing them again ten days later, and freeing or returning the queen. If a *young* queen were given in place of the old one at the end of the ten days, not one in a hundred swarmed.

I've always said that beekeeping could never be on a stable footing so long as there is no law against planting another apiary right beside you. In some of the states of Australia you can make sure that no one shall have an apiary within two miles of yours by paying annually about \$20.00. Worth it, too, isn't it?

Later.—Since writing the foregoing, comes GLEANINGS, May 1, in which J. L. Byer says, p. 349, he never expects there will be on this continent a law defining where a man can plant an apiary. Why not? Aren't there just as good brains here as in Australia? And if satisfactory restrictive laws can be made there, they can be made here. All that is needed is for beekeepers to say they want such laws.

Some day they will; for it is not for the interests of either producer or consumer to have beekeeping such an insecure business. I'm satisfied that there are now three times—may be ten times—as many beekeepers as there were forty years ago, who would like to see beekeeping on a solid basis.

GARDNER B. WILLIS, p. 156, describes what is undoubtedly the work of the larvæ of a bee-moth, a much smaller affair than the common bee-moth, *Galleria mellonella*. A cluster of three or four bees, fully matured and fully colored, will be seen constantly wriggling in their cells, unable to get out. Dig down to the bottom of the cells and you will find the small larvæ of what Cook calls the "Wee" bee-moth, *Ephestia interpunctella*, and Sidney Olliff, in A B C and X Y Z, calls the lesser bees-wax-moth, *Achroea Grissella*. I've seen it but a few times in my life, and I think it amounts to little in this region, altho it may be worse elsewhere.

AN Illinois correspondent had a strong colony in a two-story ten-frame hive (20 frames in all) which went into winter with 78 to 80 pounds of good honey by actual weight. March 14, flew strongly; April 1, all dead. No honey in upper story; 45 pounds in lower story; combs clean; all bees (about 10 quarts eling closely to combs, even to those in lower story which had honey in them. Query: What was the trouble? A plain case of starvation. The cluster was in the upper story, and when the honey in that was consumed it was too cold to leave the cluster, and the honey in the lower story might as well have been a mile away. But how about those bees that were on the combs of honey below? When a colony starves, some of the bees in their death-struggle crawl away from the cluster, apparently only desiring to die elsewhere, and may be seen hanging in peculiar fashion to the entrance and front of the hive. In this case they had strength only to get down to the sealed honey, but no strength to get the honey. Likely enough the disaster might not have happened if in the fall the two stories had exchanged places. [We do not know why this is true; but bees when starving will separate themselves from the main bunch in small clusters. We have observed this time and time again in bees that have come in combless packages from the South. If the candy has run short there will be little bunches of bees detached from the main cluster.—ED.]

J. E. Crane

SIFTINGS

Middlebury, Vt.



HOW THE BEES HAVE WINTERED.

Bees have generally wintered well here in western Vermont, altho March was the coldest known for thirty years. I notice that bees almost invariably winter well after a good season.

* * *

I am greatly interested in Mr. Byer's whopper colony of bees he mentions on page 267, April 1. We hope we may hear from it again, and that the capacity of the bees to gather honey will be as great as the fecundity of the queen.

* * *

I am glad Prof. E. G. Baldwin, of Deland, Florida, is to test thoroly the question of bees in fertilizing the flowers of the orange about Deland, and settle, if possible, the value of bees in orange-groves in Florida. I believe that, as we study this whole subject, we shall meet with many surprises.

* * *

Mr. Doolittle gives his opinion on page 268, April 1, as to the best bees. He says that queens of one or two generations from imported leather-colored queens crossed or mated to drones in no way related are the best for extracted honey; while for white comb honey there is nothing better than the golden Italians. How about the wonderful improvements some breeders claim to have made?

* * *

One is reminded of the size of our country and variety of climate from Mr. Scholl's statements on page 223, March 15, when he informs us that in Texas it is the proper time to clean up beeyards as well as beehives, while here in Vermont the snow was two feet deep on a level, and many of our hives were entirely out of sight under snow-drifts and the mercury playing about zero.

* * *

Mr. P. C. Chadwick's notes on the navel-orange blossoms, page 264, April 1, are of special value in the discussion of the value of bees in the fertilization of fruit-blossoms. It shows very conclusively that bees are quite unnecessary, and cannot in any way be helpful. The surprising thing about the navel orange is that it should grow so large and be so perfectly developed without producing seeds. There are several varieties of seedless grapes, but so far as I know they are, without exception, all small.

Mr. Doolittle's experience and experiments as given on page 226, March 15, add to our evidence that European foul brood is not transmitted from hive to hive thru honey. This is a most important matter as bearing on the necessary treatment of diseased colonies. What we want to know further is whether this is *always* true, or does honey from a colony having European foul brood sometimes transmit disease? What we want is facts, not opinions or theories.

* * *

Don't forget the postage-stamps, says the editor, page 218, March 15. Of course it is forgetfulness; but it seems sometimes almost inexcusable when a stranger asks you to take time and paper to answer his questions, and then forgets to pay the postage. I received a letter from a gentleman a few days ago asking for some information, and he enclosed two stamps, and then wrote me a note thanking me for what I had done for him. We all love to be appreciated.

* * *

On opening hives this spring in early April we found an unusual amount of brood, notwithstanding an unusually cold March, and we almost instinctively ask how this can be. One reason is that most colonies went into winter quarters strong in bees. Another is that the excessive cold of March was favorable to brood-rearing. Dr. Phillips tells us that, when the temperature outside of a cluster of bees gets below 57 degrees, the temperature inside of the cluster rises. I have found a summer temperature inside a cluster with mercury below zero outside the hive. So it would seem that bees have bred freely during the cold month of March.

* * *

That picture of Mr. Chadwick's yard, page 184, March 1, took my eye. I have often wished I might visit him, and now I can look on one of his yards. How true and level the hives stand! and those great hills or mountains in the rear! How easy to wheel the honey to the house! And then that class of beekeepers at the Ontario Agricultural College! How we wish we could have been among them, for we are never too old to learn! Again, I see the home and workshop of H. B. Phillips, page 204, of Auburn, Me., with whom we have transacted business for many years. He does a large business in selling comb and extracted honey, altho he is totally deaf.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.



A very practical and successful beekeeper recently made the remark that old black combs are breeders of disease, and that it is next to impossible to eradicate disease when using them. With new combs he claims the work is half accomplished before beginning.

A California beekeeper of some prominence once said: "The bee business is the most hopeful business of any and all businesses." He was right. Honey cannot be measured on prospects of the season. But hopes remain when reason seems to have fled.

I have just extracted nearly two tons of the finest orange honey I have ever been able to secure. Had this immense flow, with the unprecedented good weather during the orange-blooming season, been one month later, it would have been an easy matter to secure five or six tons.

In a recent letter from Mr. Doolittle I am informed of his severe illness with heart trouble. It is to be hoped that his condition may improve, and that we may yet enjoy reading many pages of his work in the columns of GLEANINGS. Mr. Doolittle, to my notion, is one of the few *very able* writers of his day.

At this writing the season appears to me as one that is to be full of disappointments as to final results. The hoped-for late rains have failed to appear, with the result that the button sage is not yielding as was expected, and the chances for the flow from the later-blooming plants diminishing as the bright sunshine daily takes its toll of moisture from the soil.

In viewing the list of officers of the United Honey-producers of America, one is led to wonder if it is not really an Indiana concern, and inclined to favor Indiana producers. It seems to the writer that it is a poor policy to expect a heavy following with an organization so centralized. That has been tried in our state. It is impossible to amalgamate the interests of beekeepers even in a state like our own, with all of the officers in one end of the state. With a national organization the task is even great-

er. [We believe the plan is to have a vice-president from each state.—Ed.]

After thirty years among the bees I have experienced what I call a disastrous honey-flow. How can a honey-flow be disastrous? A few months ago I could not have believed that such a condition would in any likelihood arise, but with me it did. In my notes I have pointed out from time to time the winter conditions in this state. Our winter, as will be remembered, was one of extremely heavy rains, and more than the usual amount of cold, at times with snow. The rains stopped abruptly, and gave way to an unusually early and warm spring. On March 1 I think I never saw my bees in a more promising condition, and the work of my young queens was all that could be asked for. Two weeks later the orange began blooming in earnest, and the flow of nectar was never greater. The results were that, within a period of ten days, my queens were blocked with honey and nectar, and relieving the situation seemed to be an impossible task. There were few colonies at that date that were ready for storing nectar in the supers; for, indeed, the bee force was lacking to perform the work. The nights were cold, as is always the case at this time of the year, and the nectar was placed close into the brood-nest. In this manner the work of the queens was stopped abruptly. To place dry combs in the brood-nest was of no avail, for it was immediately used to hold the onrush of nectar. To place foundation in the brood-nest gave very little aid, for in the greater number of cases there was not a sufficient number of bees at that time to draw it readily; or if it was drawn it was in most cases filled with nectar before the cells were half drawn. The disastrous feature of the situation was in the fact that brood-rearing seemed to have been forgotten in the mad rush to the orange, and even the cells where brood was hatching were promptly filled with honey. A more exasperating situation could hardly be imagined. Here was a wonderful flow of nectar, with too few bees to store it in the extracting-supers, so it was literally drowning the life out of the colonies. Had the flow come a month later it would have been one of immense value, and the results could have been only for the best; but as it was, the bee force for later work became so curtailed that the results of the season for me have become doubtful.

E. G. Baldwin

FLORIDA SUNSHINE

Deland, Fla.



THE BEE FLORA OF FLORIDA.

I venture the assertion that no other query is so often propounded to me, by letter and by word of mouth, as this, "What do my bees gather mostly in Florida? and how shall I get them in best condition for the honey-flow?" With the hope of being of real service to the inexperienced, in our own state and possibly answering the unspoken inquiries of some outside of our state who may be looking with longing eyes to our borders, and who wish to know the sources and methods best adapted for those honey-flows, I purpose to give soon a short series of suggestions on the bee flora of Florida, with a practical end in view. I shall try to follow, chronologically, the order of blooming of the various sources of honeys, and detail, not too fully, methods that have been found practicable, and mainly successful for each source of honey in the various sections of the state. I might add right here that by reference to p. 175, March 15, 1911, a map will be seen showing the state to possess six main sources of honey—that is, surplus honey—honey in sufficient quantities to find its way into the markets of the country. These will be seen to include the region of tupelo, the partridge pea, and chanquapin, the orange section, the palmetto (saw and cabbage), and the black mangrove, with the very limited area of the manchineel in the southeast. I ought, probably, to include pennyroyal, tho it has not been important, commercially, till recently. I am told it was formerly very important, being first discovered, if I recollect aright, by that pioneer, O. O. Poppleton, near Tampa. He it was who first called the attention of beemen to this member of the mint family, and its importance to beemen, away back in the '80's. Latterly it is assuming more prominence. More of this later. Its best area is south of Tampa, probably south of Bradentown, and across the state, east and west, from about Bradentown, including most of the high pine lands south of that imaginary line.

WONDERS NEVER CEASE.

This year the orange bloom made me feel a perfect ignoramus in Florida seasons and sources. For sixteen years I have not known orange honey to be stored in surplus chambers after April 10. Mark well. Here it is the 23d, and bees are working harder on orange bloom than they did in the middle of March, our usual flood season for that

honey; and that, too, after practically a week's cessation altogether. I was facing a total failure, in fact. All beemen in orange sections had made up their minds to a failure. The bloom was so scant, to use a Cracker term, "It was the sorriest bloom since the freeze," and cold, during even that little bloom. No wonder we got no honey. And now, after a little rain, but mostly after genial and warm weather, the tardy growth of new sprigs is appearing, and in many instances these new growths are covered densely with little buds or "pinheads," we call them. Many are opening and yielding right now, and bees are storing in supers right along—not rapidly, yet, but more every day; and these new blossoms will be opening more and more for two or three weeks. I see no reason why half a crop, perhaps, may not still be secured in favored locations, and a fourth, perhaps, in most orange sections. That is better than nothing. The bees work well in the mornings. The yard roars as in the midst of swarming-time. About ten o'clock there is marked diminution, due to the heat and drouth combined, which dries up the nectar in the blossoms; but about two or half-past, in the afternoon, they begin again, and about four the yard is alive with flying bees again that continue to fall, weighted and weary, on the alighting-board till long after sunset. I had taken my hive off the scales, but have placed it back on, and am looking for some interesting data. More later. It is going to make our extracting come in May, tho, instead of April, as usual. You can imagine what splendid opportunities this gives us to requeen. I have practically requeened my entire home yard, and am going at the outyards now. Breed—I never saw anything like it—easiest thing in the world to get cells as long as the last joint in my middle finger, and, best of all, no swarming. Dr. Phillips, tell us why. I want to say more later about this swarming. We are getting some interesting data along that line this year. I have known of only two swarms in the county thus far this spring.

Book-keeper, Beekeeper.

While my duties as individual book-keeper in a bank keep me very busily employed I manage to secure some 3000 lbs. of honey each year from sixty colonies of bees. Many colonies give me 100 lbs. or more of surplus.

Pine Bluffs, Ark.

J. E. Clarke.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas



A MARCH HONEY CROP.

Contrary to our expectations, on account of the drouthy conditions early in spring, the mesquite bloomed very profusely, and almost a month earlier than usual.

The mesquite ordinarily blooms in April in south-central Texas, and again in July, in favorable years. This year the colonies were hardly strong enough to harvest the mesquite honey—at least in the fore part of the blooming period. As it lasted longer than the three weeks, however, the bees increased rapidly on account of the large amount of brood when the flow began.

Another obstacle was the coolness of the nights and early mornings, and the many days of high winds that interfered greatly with harvesting a good crop. An average of 35 pounds, half comb, the rest extracted honey, is about the quantity our own bees succeeded in storing.

FORCING HONEY INTO SUPERS.

This spring afforded us a most convincing experience in favor of a divisible brood-chamber. When the early honey came it did not take long for the bees to block up the upper portion of the brood-chamber with honey, and seal it. This soon crowded the brood-nest to a mere handful of brood, and also kept the bees from doing the best work in the supers above, on account of their dislike to work above sealed stores and far from the brood-nest.

Here was the same old condition of nearly twenty years ago, and for which reason I adopted the divisible hive. What did we do? When supering time arrived, and we discovered this condition of the hives, we did not place a single super on a divisible hive before first "switching" the two halves of the brood-chamber. We proceeded in this manner: We worked in forces of two men, one armed with smoker and hive-tool, for smoking the bees and prying the hive sections apart. The other then first lifted off the shallow extracting-super on the hive, setting it aside. He next lifted the upper half of the divisible brood-chamber and held it while the former, after smoking the bees as needed, lifted off the lower half, and set it on top of the former upper half that had been rapidly placed on the bottom-board by the assistant who held it ready for this purpose. Thus the two halves were completely reversed or interchanged. The objectionable sealed honey was now below, from which place the bees would remove it.

The biggest part of the brood was thrown right up to the top of the brood-chamber.

The new super, with foundation in full sheets, was then set on the newly changed hive, and the shallow extracting-super, more or less full of honey at this time, replaced on top of all, and the bees went right to work and yielded results over the loafing colonies of deep-frame hives that could not be thus easily manipulated. This manipulation, which is accomplished very rapidly, also stirs the colony into new life and activity. I have claimed that it "stirred new energy into the bees" when that question was up for discussion some time ago.

That it "knocks swarming in the head," as I have often claimed in these columns, there is not the least doubt in my mind. Besides putting the colonies to work, and where we want them to work, the new cell room provided in the center of the brood-chamber affords plenty of laying room for the queen and consequent contentment of the colonies. The combs were, before the change, more or less devoid of brood or honey next to the bottom-board. When placed above in the changing of the two halves of the brood-chamber this empty comb room came in the middle of the brood-nest. The bees removing the honey from what were the former objectionable sealed combs of honey above, but now below, also provided additional laying room. In fact, an entire reorganization of the brood-nest took place as well as of the whole colony, and that with excellent results. I cannot obtain them with the deep hives scattered in most of my apiaries.

MORE UNIFORM QUALITY AND BETTER PRICES.

There has been some complaint on the part of a good many beekeepers in regard to the low price of honey in comparison with other products. It has been a source of pleasure to me to have been so situated as to be enabled to look into such matters, perhaps, a little more thoroly. This opportunity has revealed that there are several causes in addition to supply and demand that have to do with the regulation of prices of any product.

During the last few months I have had an opportunity to observe the many varying methods of packing for market, not only bulk comb honey but extracted as well. Out of over fifty lots of honey observed during the last several months there were not two packed alike. There was also an exceedingly great difference in the flavor

and quality of the honey. Not any of it was packed according to the standard fixed so deeply in my mind.

In my opinion, a ruling of higher prices than we have been able to obtain need not be expected until there is a much more uniform method of packing the honey for the market as well as a more uniform grading. "Honey is not honey," as it used to be when the market was less educated. There is always a good demand for a better quality of honey, while the poorer kinds have to hunt for a market. But this is not all. The poorer grades affect the market materially in "pulling down" the price of the better grades. That is why we suffer from prices lower than they ought to be, even when the supply is not so large. Here is work for our organizations to spend a good deal of time on during this year, and before the new crop is ready for market.

THE PROPER TIME TO MOVE BEES.

I have tried to ascertain for some time whether there is any material difference in the time of winter or early spring moving of bees, and the effect upon the colonies of bees themselves.

In moving bees to new locations I have observed that those which are transported very early in the year or during the winter before any brood-rearing had begun to any extent continue in fine condition throughout the entire year. Apiaries that are moved somewhat later, with brood-rearing already well under way, but the weather yet quite changeable, and very cool nights predominating, seem to be more or less affected by the move according to the time and weather conditions prevailing. Later moves of bees to new locations, after the weather becomes more settled, altho brood-rearing was further advanced, apparently escape the bad results. It is apparent that there is a difference in the welfare of apiaries of bees moved at different times of the season and in different stages of development of the colonies as well as a marked difference in the honey yields.

Is it possible that colonies moved after brood-rearing has advanced to a certain degree, with unfavorable weather conditions still prevailing, may not be able to take care of the brood as properly as to preserve the welfare of the colonies? Is it possible that the disturbance causes not only the brood to suffer materially, but the old bees as well? The bees wintered over from the preceding season are becoming older from day to day, and dying off rather rapidly. The nurse bees are not of the proper age for best results. It is difficult, too, with bad weather conditions, to get water and fresh pollen; and even with a supply in the

hives, the cool weather is not very favorable for rapid progress in brood development; and the decreasing number of bees apparently often have a difficult time to keep the slowly increasing brood-nest warm. The colonies are in a critical condition at this moment, and the least disturbance must have an effect upon their welfare. Is it not possible, then, that this is not the best time to disturb them by subjecting them to the severe test of moving to new locations?

It seems that, in the event earlier moving is not possible, it is better to wait until settled warm weather has arrived, and the colonies have had an opportunity to build up in numbers so that the brood can be better cared for. Under such favorable conditions there need be no bad results. Our experience has proven, in addition to the above, that colonies moved later, especially just before a honey-flow, show increased vim and vigor, and yield more excellent crops of honey than those not disturbed. It seems that the shaking-up of the colonies at this stage of development stirs them to greater activities.

* * *

The Guadalupe Valley Beekeepers' Association is a new district organization launched recently at Seguin, Texas. Guadalupe, Comal, and Hays counties are at present in this district, with adjoining counties to come in later. Jon. Donegan, Seguin, is President; John Herbold, Seguin, Vice-president for Guadalupe Co.; H. Franke, San Marcos, Vice-president for Hays Co.; Herman Oelckers, New Braunfels, Vice-president for Comal Co.; Louis H. Scholl, New Braunfels, Secretary. A vice-president from each county is provided for in order that the counties may all have proper representation on the executive board.

Besides the business of organization, there was other discussion on beekeeping subjects, making an interesting gathering. Much enthusiasm was shown by those present. Regular quarterly meetings were decided upon, besides occasional outings and picnics and field days. Except for an initiation fee of one dollar there will be no dues. Funds, if needed, will be raised by a nominal assessment of the members.

Prof. Paddock, State Entomologist, of College Station, was present and addressed the meeting on the foul-brood work and the importance of beekeepers organizing themselves for the purpose of obtaining the appointment of apiary inspectors. The district inspector of the new organization is John Donegan, of Seguin. A standing committee on program and entertainment, and a committee on bee-disease eradication is also provided for.

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.



NATURAL SWARMING.

"I am aware that the older beekeepers work mostly for the prevention of swarming; but many of us beginners like to see swarms issue, and learn some of the ways in which these swarms may be worked so as to secure a fairly good return in honey. When may prime swarms be expected to issue?"

Prime swarms may be expected when the first queen-cell is sealed over; but sometimes they come soon after the first egg is deposited in an embryo queen-cell. Some idea of the situation can be had by looking at the entrance of each hive about ten o'clock in the forenoon at the beginning of the white-honey harvest, or a little before. Colonies that are at work strong at this time of the day, and that cluster out at the entrance and fan their wings near sunset, may be expected to swarm soon.

Most prime swarms issue between 9 A. M. and 2 P. M. So few will issue outside of these hours that it hardly pays to keep close watch for swarms at other hours.

"I am told that swarms very often run away. If this is so, how can it be obviated?"

The absconding of prime swarms can be almost certainly prevented by clipping the wings of the queens previously. This is most conveniently done about the middle of May, at which time the fruit-trees are in bloom. At this time, at about 10 to 12, the larger part of the bees will be out after honey, and the queen is more easily found among the limited number of bees. Moreover, there is no danger from robber bees making a raid on the honey while we are looking for the queen.

Some cut only one of the wings on one side the first year, the other wing on the same side the next year, then one wing on the other side the third year; and, if the queen lives that long, the remaining wing the fourth year. In this way the age of any queen is kept trace of. However, most apiarists cut about half of the two wings on one side, which entirely precludes the queen from flying. Some take hold of all the wings in picking the queen up, and cut all of them off about half way up to the thorax. Those who practice this, claim that queens so clipped are very easily found when it is necessary for the apiarist to look for them.

A clipped queen runs out with the bees

just as tho she had her wings; and as she cannot fly she goes anywhere from two to ten feet from the hive on foot. Generally a dozen to fifty bees will gather about her after she ceases trying to go further on foot; and as soon as the swarm misses her they will return to the hive from which they came, running in with fanning wings. This generally attracts the few bees gathered around their queen, when, if the hive is near the ground, so that bees on foot can reach it, the bunch of bees set forth with fanning wings, and they and the queen return with the swarm, so that not one queen out of ten gets lost, even if the apiarist is not on hand to oversee things. When he is, he can soon find the queen, let her run into a small wire-cloth cage, and lay her at the entrance of the hive from which she came. Then when the bees return, and most of them are in the hive, the cage is opened and the queen allowed to run in. Of course, unless the queen-cells are cut they will swarm again the next day. Sometimes, even with the cutting of all cells, the swarming fever keeps on; so the better way is to set the old hive on a new stand as soon as the queen is found, or before the bees start to return, and put a prepared hive on the old place with the caged queen at the entrance. Then when the bees return they will hive themselves; then the queen is allowed to run in with the last half of the bees. This generally stops all after-swarming, and insures a good yield of section honey from the new colony. For the highest success in the production of comb honey strong swarms are desirable, and hiving swarms on the old stand not only conduces to their strength but has also a strong tendency to prevent the issuing of after-swarms.

It is not necessary to climb and cut limbs except on rare occasions where queens are not clipped. Allow the bees to cluster where they please, and, nine times out of ten, with two or three light poles of different lengths to which a basket or wire-cloth swarm-catcher can be attached near the further end, swarms that cluster out of reach may be shaken off and secured. Having the bees in the catcher, so there is no danger of other swarms coming out and uniting with them, as would be the case were they allowed to remain where they clustered, plenty of time can be taken to set the old hive off its stand and put a prepared hive on the old place if desired.

GENERAL CORRESPONDENCE

A NEW HOBBY FOR GIRLS

BY E. S. BRINTON

I believe in hobbies. What it is makes little difference so long as it is something that calls forth the best that is in one and not the worst. It should be something so interesting and entertaining that it will absorb the leisure hours, provide food for thought during idle moments, and quicken the desire for study and reading.

In taking up this subject my mind turns first to the girl of limited means and opportunities. She may be living in town or country. She has had a public-school education, but is ambitious to do more—hungry for outside interests, and to have and do something for herself; yet, because of finances, family conditions, or health, she cannot leave home or make any radical change in the routine of living. To this girl especially, I recommend beekeeping. It opens a door of marvelous interest. Thru it is a wide field for mental and physical development.

At the very beginning I wish to say I am not an expert in any phase of beekeeping, and cannot boast of phenomenal increase, high-bred queens, or great harvests of honey. I started with my first bees eight years ago, and now have six colonies—quite enough for a back yard that is supposed to be the family playground. We have honey to eat, to cook with, and to give away. The bees have paid expenses, and I have had no end of pleasure with them.

The cost of starting with bees is small. If good judgment is used, this hobby will not only pay expenses, but also yield a reasonable interest on the money invested; and to a girl who must count every penny, this item alone is worth considering.

Notice the different vocations and professions in which a girl will gain knowledge in connection with her hobby of bees. First, local botany and geography. She must start with her immediate neighborhood; study the trees, shrubs, and wild flowers and the time of their bloom—learning which will yield pollen and which nectar. She must know the nature of the farming country and how it influences the bees. In other words, are there large acreages of swamps to yield a fall crop of honey, or is it an upland region of clover, alfalfa, or buckwheat? Seasonal temperatures and weather conditions should be noted; for while books and bulletins give general directions,

every locality differs, and each one to a great extent must work out her own problems of management and wintering.

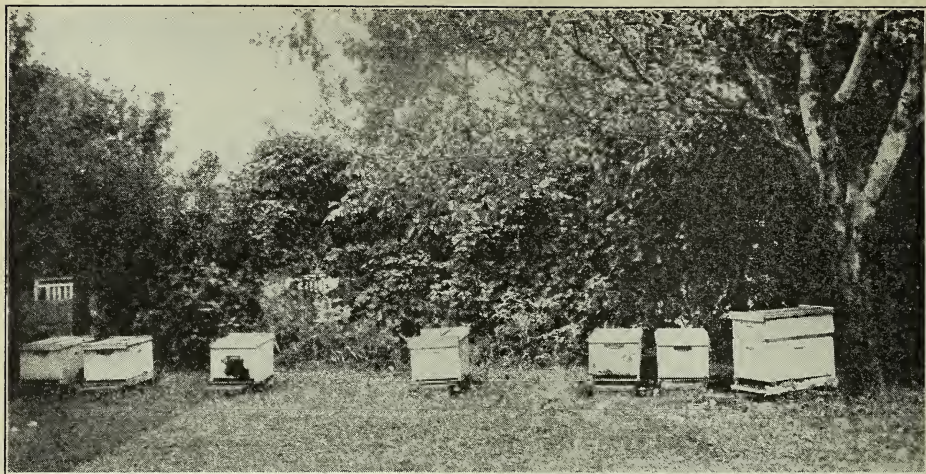
A knowledge of simple carpentering, and the use of tools and painting, is necessary; for to buy the hives already set up is extravagance. Full directions for fitting the pieces of hives come from the manufacturer, and any one who can read the patterns of crocheting and knitting can understand these.

The possession of honey in quantity will bring a desire to use it in cooking; to make syrups, honey ice cream, cakes, and candy. The Farmers' Bulletin on this subject will be an incentive for experimenting in the home kitchen.

Selling the surplus is a problem all its own. Probably the whole question of profits will depend on whether the girl herself can also become a good salesman and create a market for her honey, bees, and wax. To do this she must mingle with people, overcome any shyness she may have, and learn to talk interestingly and intelligently. She must adopt some scheme of keeping records of hives and queens. She must learn to correspond with business houses, to handle money, to do simple book-keeping and accounting.

A very important question arises—"How shall I begin beekeeping when I do not even know a bee when I see it?" Begin slowly. Don't do as one young man did who advertised for twenty-five colonies of Italian bees. He was fresh from the city, and had never been in contact with country life except for summer vacations, but even then he should have known better. Of course, he became discouraged, lost his nerve after a few stings, and by the second summer his bees were not in evidence. One colony of bees, properly cared for, with the usual annual increase, is sufficient to engage all your spare time and thought.

Read Kipling's story, "The Mother Hive," found in his book called "Actions and Reactions;" also Maeterlink's "Life of the Bee." Beekeepers as a rule have little patience with the latter book on account of the mistaken idea that it is a text-book. It is not. The author says in the first sentence he did not intend it for a treatise or a practical hand-book. I value it for its inspirational description of the inside of the hive



Under the apple-tree. Backlot apiary of E. S. Brinton, West Chester, Pa.

and the habits of the bee. To the mere onlooker, bees are nothing but a crawling mass of insects without method or reason. Maeterlink gives each bee a duty and a place in the kingdom, with such vivid words that the most casual reader can comprehend it.

Now as to getting the bees. The cheapest and easiest way is to get some plain dark bees in an old box hive and do the improving yourself. I bought my colony from a neighbor, paid three dollars for it, and helped carry it home and set it down in the midst of my flower-garden. That was in March. In the meantime I ordered from a supply house two hives and two supers in the flat. Putting these together was as fascinating as a picture puzzle. I split some pieces with poor nailing and made mistakes with others, and finally painted too many surfaces of the hive; but I did it myself, and was wiser for the doing. In fruit-blossom time the bees were transferred to the new hive. That was a wonderful day, for I had my first glimpse of the inside of a hive, and learned to recognize the queen on sight. I knew nothing of the operation, but was assisted by a brother who had had a year or more of experience. The bees were as quiet as flies. We discarded all veils and gloves so as to work unhampered, and two small children played about and enjoyed the dripping honey.

That year was one of the record-breakers for a white-clover harvest; and so, even with all my interruptions, the bees gave me two supers of honey and I was tremendously proud of them. Then everything seemed to go wrong. Those bees, hitherto so peace-

ful and quiet, and absorbed in their own affairs, became possessed of tempers like that of Satan himself. After the honey harvest I attempted to introduce Italian queens. All the books said this was the ideal time. Instead of flying off to the fields in the morning these bees just loitered around at home waiting for something to happen—there seemed to be literally millions of them, and finding that restless black queen was worse than finding a needle in any haystack. Also I had such confidence in my control of them that the matter of self-protection was overlooked entirely. I was dressed to be comfortable for the summer season—short skirts, low shoes, elbow sleeves. Oh, yes! I wore a thin net veil and some kind of short light-weight gloves, so my fingers would not be clumsy. That was according to the books, only some advised cutting off the finger tips. Talk about losing my nerve! Before that job was done I wished I had never seen a bee. I was willing to forego eating honey forever, if some one would kindly remove the creatures from my back lawn!

Well, winter came at last. On the first cold day I picked up the hives and carried them off to a corner sheltered by apple-trees, so that their flight-line would not be directly over the lawn. Before another swarming season I successfully introduced Italian queens. There were far fewer bees to search over, and those were improved in temper. Never will I advise a simple-minded beginner in beekeeping to requeen a colony of hybrid bees in late summer. Do it in the spring, when you can work with ease and confidence. It were better to lose

some honey than every ounce of courage and all love for beekeeping.

There have been many recommendations regarding the kind of garb a girl should wear. I acknowledge the men with trousers have a decided advantage in some ways; but, nevertheless, I am not going to follow suit. I have found that with clipped queens there is no climbing of trees or ladders, nor does any circumstance ordinarily arise where skirts are really dangerous. There is a possibility of bees climbing up, and some women have spoken of being decidedly annoyed that way. That has troubled me very little, chiefly because I make sure the bees never have such an opportunity. I make it a practice not to walk or stand at the front of the hive, at least without making sure there are no stray bees just under me. Then when operating I either sit or kneel with skirts well spread out.

My preference is for a dress of white with skirt long enough to meet high-topped shoes. White is the coolest material possible, and it does not attract the bees as does a thick dark goods. It seems strange that, while they sense one's vulnerable spots around hands and ankles, they seldom attempt to sting the body itself. I have noticed that it is perfectly safe to wear a waist of the thinnest, sheerest material, while at the same time it may be necessary for comfort to use gloves. My gloves are

of the ten-cent cotton variety, with long muslin uppers. At first these were dipped in linseed oil to make them absolutely bee-proof, but I do not mind now. I have become sufficiently inoculated so that a sting means not more than half an hour of discomfort. At first my arms would swell and throb so that sleep would be impossible for two nights. I use a wire veil. I have never known a bee to get inside. The wind does not disturb it, and it does not tear on rose-thorns or trees.

I do not advise the large-sized hives, now so popular among professional beekeepers. The time of year when the necessity for moving the hives is most liable to occur is at swarming season (when the weight is probably the greatest); and the ordinary person is so fearful of stings that assistance is always difficult to secure. The eight-frame hive weighs fifty pounds and over when full, and is quite heavy enough to handle.

I have spoken of the advantage of bees as a hobby; but there are other things that will come from an intimate association with them besides a mere study of animal life or a possible financial gain—gentleness of touch, a quiet manner, self-control, a keen sense of observation, a deeper, broader knowledge that will give a more sympathetic understanding of all the wonders of our universe.

West Chester, Pa.

A BEE IN A CALIFORNIA BONNET

BY FLORENCE B. RICHARDSON

The bee has been in my bonnet for so many years now that I cannot imagine a bonnet trimmed otherwise. My courage was pretty good when I first reached the Golden State, for I had read all the lovely railroad prospectuses and all Dr. Cook's interesting articles in *GLEANINGS*; and when a fine swarm alighted on a tree near our new home I promptly hived it in a fruit-box with a couple of slats hastily nailed in. You see, when a person has always lived in a city, and kept bees on a city lot, where swarming had to be kept down and no stray swarms ever by any chance allowed to get away, why, a whole big swarm in a tree with no one's name tagged on to it looked pretty big to me.

Well, that swarm never did seem to do much, mainly for want of attention, I guess, or may be it was because of too much—one is never sure until afterward that he did just the wrong thing at the right time or the right thing at the wrong time.

However, one of our valley winds—more like a hurricane—came along and entirely demolished combs, bees, and all. The hive remained as a reminder of what might have been had I done thus and so.

After a time, however, I had an opportunity to buy ten colonies of bees in old box hives at my own price, the owner saying he'd "much rather run into a bunch of wildcats than to tackle a colony of bees." To digress a bit, I've often found that these "wildcat" people have either *never been* stung, or else once or twice has been the limit of their experience; and to see them go fishing and get chewed alive by black flies, or to see them sit on their porches and get liberally stung by mosquitoes with never a murmur in either case, is, to a rabid beekeeper, a bit inconsistent, to put it mildly.

When I first saw those bees they didn't look very strong, and, with the exception of three colonies, I expected to have to re-



Susan E. Howard, Stoneham, Mass., demonstrating that she is not afraid to give bees a shaking-up. See editorial.

queen; but it is a difficult matter to tell what a box hive may contain, so I made the offer of \$3.50 for the whole outfit just as it stood. He was glad to get it, and said he'd be better suited when the last one was gone. My family insist that he gave me the bees and sold me the honey at half price.

It was not possible to get the bees at once after I purchased them; and when they were finally brought to the house, several of the colonies had gathered honey in such quantities that two men had a bit of a struggle getting the hives up the steep grade that separates river bottom from plain. From about six hives we strained out 300 pounds of honey, and rendered about 30 pounds of pure yellow wax.

There is no more fascinating thing in beekeeping to me than transferring bees from an old box into a nice modern hive, and then watching them hustle. Of course, sometimes the hustle is missing along with

the queen; but with good care they nearly always make good colonies, and sometimes a really choice queen is discovered, as in the case of one colony in this lot. She has eight out of the ten frames entirely filled with brood, and the cappings of their honey are pure white. Those white cappings are the only sign of black blood they show, and I never handled gentler bees.

Last year, on the invitation of Miss L. D. Clark, of the California University Farm Extension work, I went to Davis, Cal., where the 44th fruit-growers' convention was held, and spoke twice to crowds of women on the possibilities, profits, and pleasures of beekeeping for women. My! but it was great to see the interest shown, and I know there are women from Shasta County to San Diego who are keeping bees at present because they feel that a woman can do so successfully. She certainly can.

Hughson, Cal.

STARTING WITH A SMALL LATE SWARM

BY JEAN WHITE

My own first experience with bees came about rather unexpectedly. I had always been much interested, but had delayed purchasing any, fearing my lack of knowledge might cause me to lose them. I had a well-defined determination to own a swarm or two of bees some day, but hoped to have an opportunity to learn more about them than I could get from a book, altho I had read a good deal about them.

One hot afternoon in mid July the men came in from the hayfield and said that a swarm of bees had settled on the trunk of a small tree by the roadside about five feet from the ground. In my wildest dreams of honey and honeybees I had never dreamed that a swarm would come to me; but I had no mind to let them leave me if I could avoid it. The men were wet with perspiration, and dared not mix up with such fiery-tongued visitors, so it was distinctly up to me to take them.

I got out my bee-book and turned to the chapter on hiving, and hastily perused it. A veil and gloves and a box for a hive were needed. I found a box about fifteen inches square, and nailed a board across the open end, leaving a slit an inch wide not covered. I put on my shade hat, tied a big chiffon veil over it and around my neck; put on thick driving-gloves, got a big turkey wing and a white table-cloth, and started out to experiment. My heart pounded fiercely with fright; but I would not give up to it,

so I spread my table-cloth at the foot of the tree and as far around it as possible; set my improvised hive on the cloth with the opening toward the tree-trunk, and boldly began to brush that clustered mass toward the ground. They clung more or less to the wing, and I brushed them into the opening of the box with hand and wing, and here I discovered that tight kid gloves are not a very successful protection for my hands; for where the kid stretched tight over my knuckles they stung thru it, tho not able to leave the sting in the wound. After a while one got on my veil over my chin, and lanced me finely thru the gauze stuff before I had presence of mind enough to slap it and put a stop to its mischief. I kept at work, and soon had the satisfaction of seeing the crawling mass hurrying into the box. When nearly all were in I left them, as it was nearly night.

I did not go near the bees again until after dark. They were quiet in the box, and I wrapped it in a piece of mosquito-netting and carried it to the house. Then I drove to town and procured a second-hand hive. I wanted to shake them into it that night, but was told that I had better set my hive where I wished to establish it, and shake them on to the entrance-board in the morning. This I did, and accomplished the feat without accident. When I removed my veil the night before, I bathed the stung places with a strong solution of chinisol.



Beekeeping class of the Massachusetts Agricultural College on an excursion to the historic apiary at Colrain, Mass., where Langstroth carried on his experiments. See editorial.

They were not much swollen, and the next day were only a trifle sore. I found later that I was practically immune to the poison, for, tho stung occasionally, I never suffered any particular inconvenience from the stings.

How I watched those bees! I would sit for hours close to the hive and watch them carry honey and their overloaded pollen-baskets into the hive. I was anxious to know what was going on inside; and after a couple of weeks I opened the hive, but I had put no foundation in the frames, and they had built their comb crosswise, and it was all connected together, so that I could not remove the frames to look them over. There were signs of brood in some of the combs that I could see, so I left them alone, satisfied that all was going well. In the fall I began to feed them syrup made of granulated sugar and water half and half.

I always bore in mind the admonition in my book, to move quietly, and therefore I

had no trouble with them. As cold weather came on I put blankets over the hive, covering top and side except the entrance side. This faced south so as to get the warmth of the sun. The day before Thanksgiving it began to snow, and, first covering the entrance with netting so that the bees would not fly out the hive was placed in the house cellar, which is dry and cool. The comb they had made was filled and capped, all but a very little of it. I had not expected any surplus honey as the swarm was late and not a large one. The hive was raised about two feet from the cellar bottom and kept dark.

I love my bees, and shall always keep them. Should I lose all I have I should look for the cause, then buy more to start a new apiary, and try to avoid future losses from any known cause. Bees are interesting and profitable. Their wisdom puts to shame the wisdom of man, and their product is most delicious.

Glover, Vt.

A BOY'S START WITH BEES

BY J. A. ALLARD

When quite small I was impressed by the only two things which I knew about bees—that they could sting, and make honey. I think that I was more impressed on several occasions by the first-named quality.

My uncles kept bees, and it was when I visited them that my interest was aroused.

The rows of clean white hives on a green background, and the hordes of yellow bees glistening in the bright sunlight, and ever working and humming, made a beautiful picture indeed.

When my uncle came home from work I plied him with eager questions, and he will-

ingly unfolded the story of the queen, drone, and workers; of the brood-nest, eggs, larvæ, and pupæ, and explained that the half-depth boxes were to hold the surplus honey, and he showed me an empty hive and section-super.

He then started a fire in a queer-looking little furnace, the smoker, and invited me to go along and see the bees and queen. I pointed to a bee-veil near by and asked him if we did not need it, for I was very much afraid of getting stung. He replied that he seldom used a veil, and promised that, if I did what he told me, I should not receive a single sting, so I decided to take the risk and follow along.

He singled out a hive, gave two or three slight puffs of smoke at the entrance, and gradually pried the cover up, puffing some smoke under it at one side as it came up. He told me to stand perfectly still, and not to make any quick moves. I expected to see probably a handful of bees; but as he lifted the cover there was a great roar, and I saw the inside of a strong colony for the first time. I thought there must be millions of bees. They gave me a sort of crawly sensation, and I would gladly have run away, but was afraid to stir.

My uncle then removed the division-board and the three combs next to it, one by one, each comb literally crowded with bees. He told me not to blow my breath against the bees, and then shoved a comb in front of my face and pointed out the larvæ which I thought resembled the little white worms found in rotten wood. He then pointed out cells with eggs in, and, tho I could not see the eggs, I nodded my head and made believe I did, for I was afraid I would have to breathe, and I didn't know what those bees might do if I breathed. After he had removed three frames on one side of the hive, he pried all the frames over a little, and removed the frame next to the opposite side of the hive.

"There she is!" he exclaimed, and then pointed out the queen. I noticed that she had no stripes like the other bees. He then slowly replaced the frames. Only once did

a bee threaten me. It came up and poised within a few inches of my nose and stayed there for a second. I stood as straight as I could and held my breath, and I felt cross-eyed for about a week from keeping both eyes on it. But the bee left, and I was glad it did, for I was beginning to think seriously of leaving in a hurry. So I got off without a sting, as my uncle had promised.

After I got the hive home, my first wish was to get some bees. Happily a friend who kept bees, mostly in the old-fashioned way, knowing that I had a hive, and wanted some bees, promised me the first swarm he should have. I procured foundation from a supply-dealer and made my hive ready for the bees; and a swarm was given to me on Saturday, June 15, 1912. They built up rapidly, despite the fact that I inspected them at least once and sometimes twice each week day, handling each frame. There is no doubt in my mind now that those bees were glad to see Sunday come. Some time in July they swarmed, and I put the swarm in a standard hive which I had bought in flat and put together. The new swarm built up into a strong colony before winter, and the old colony gathered about twenty-five pounds of surplus.

To prepare these colonies for winter I placed them side by side, put a super filled with chaff on top of each one, and then put some rough boards around them and banked up with dirt. I happened to have a large box about one foot deep which telescoped nicely over both hives.

The next season I ran my bees, together with some others, on shares. But about this time I got a position in an office and was unable to give them enough attention. I started to work about 8:00 A. M. and quit at 5:00 P. M., and had my bees to huddle and other tasks to perform besides. Thus I was unable to do anything well, and the bees were greatly neglected. However, I got a good crop of honey, mostly extracted. I was enabled to increase my own two colonies to fourteen, and get about fifty pounds of surplus extracted honey.

Osecola Mills, Pa.

CLERGYMEN AS BEEKEEPERS

BY THE REV. HERMAN W. WATJEN

Some time ago a noted clergyman, speaking in the city of Boston to a large gathering of ministers, mostly from country parishes, said, "Brethren, keep hens; they are profitable, and will add materially to your income." Had the good preacher known

anything about bees I am sure he would have changed that statement. He would doubtless have said, "Brethren, keep bees; they are more profitable than hens and require less care; they take up little room and make no noise; they can be kept almost



These bees are located in the center of Morgantown, N. C., a town of 5000 inhabitants. They fly from $2\frac{1}{2}$ to 5 miles to the sourwood.

anywhere—in your study, in your attic, in your church-tower, on your shed roof, in the corner of your back yard, anywhere, so long as they can get out; they are clean, and need not be fed except on rare occasions. They can be left to care for themselves during your summer vacation, and they will work for you even while you are preaching. Therefore, brethren, by all means look into the bee business.”

It was by accident that I became a bee-keeper. It is not my profession but my hobby, my recreation, my pleasure. Since everybody ought to have a hobby he might as well have a good one, and I know of none better than bee culture. My deacon's wife offered me a swarm which had clustered on a low bush in her garden. They looked very inviting—a handsome, quivering bunch of large Italians. But my ignorance prevented me from getting them, altho I held a hastily constructed box, well besmeared with molasses, close to their noses for more than an hour. That tempting bait had no attraction for them, and I saw them sail away in a great cloud of joy. But my interest was aroused, and I purchased a colony. These soon multiplied, and with the increase came experience and

knowledge and honey and money. This was about ten years ago, and these have been years of genuine pleasure and profit. Half a ton of honey is my usual annual crop from about a dozen or fifteen hives. What does not go to sweeten myself, family, and friends, is sold, and the profit helps to pay taxes on a summer cottage and for the gasoline of an auto.

But the money profit is not the only consideration for the ministerial beekeeper. There is the vast field of biological knowledge to which the honeybee introduces him; and not only biology but botany, too, invites his renewed investigation. Every flowering shrub is alive with interest; and a walk thru the fields on a summer's day has added charms. Illustrations from nature are always interesting, and these multiply as the preacher makes first-hand investigations.

Yes, brother minister, try the honeybee for an experiment. Do not begin on a large scale. Get a colony of very gentle bees first. Timidity will soon vanish, and a few stings are quite exhilarating and healthful. Soon you will be immune to all discomfort, and then the real pleasure begins.

Warren, R. I.

CIRCUMSTANCES ALTER CASES—AND THE DISTANCE BEES FLY

BY L. E. WEBB

I am sending you a picture of my apiary of 13 colonies (three not showing) which have built up in two years from one colony, increasing the first year to 4 and last year to 13, with all but two headed with pure

Italian queens, altho I got stuck on several occasions by having impure queens sent me which gave considerable trouble in re-queening; yet with my increase from 4 to 13 I secured for market about 300 sections

surplus and all in good shape for winter, and all have come thru the winter to date fine, and are starting a little brood-rearing and have heavy stores yet.

The picture was made Feb. 1, so you will see I am wintering outdoors in single-wall eight-frame hives and haven't lost, I don't believe, a hatful of bees, and the rough weather is over.

I am fully sure of the fact that I made a mistake in starting with eight-frame hives, as the season is so long and brood starting so early, and it seems this eight-frame proposition is upsetting lots of people who have prolific Italians down this way, as it keeps constant work in manipulating.

Our honey-flow is not steady; and after fruit and locust-bloom in spring there is a lapse of a couple of weeks and then a heavy poplar flow, and then a lapse and our

best and largest flow, sourwood, yielding the whitest and perhaps best honey made, and the flow is very rapid.

Sourwood is a tree of the mountains, and my sourwood is gathered from a mountain which, at its nearest place at the foot, is $2\frac{1}{2}$ to 3 miles, and ranging up to $4\frac{1}{2}$ to 5 miles at the top, and at some places that far to the foot of the mountain, and from this mountain the bees get their sourwood. That differs with the ideas of some in other sections as to distances bees go; but facts can't be altered, and I had several stands which averaged around 40 to 50 sections, or about two supers of pure sourwood, and one filling nearly three supers, and perhaps some would be ready to take issue as to distance; but I decided long ago that locality and necessity cause bees to vary largely in their habits.

Morgantown, N. C., Feb. 2.

THE LOCATION AND ARRANGEMENT OF OUT-APIARIES

BY CHARLES E. KINZIE

To get down to business in running out-apiaries we must figure ahead. I have had the best success by arranging for two supers to each hive; and for some, three or four supers. I use ten-frame hives only.

One out-apiary of 130 colonies I have divided into three rows, the rows 16 feet apart, and the hives 8 feet apart in the row. I find that this plan is a success; for when I am extracting and go to a hive tiered up three or four high, and tear it all down, the bees do not go to the next hive. Again, if I am treating the colony for European foul brood, the bees stay at home, and the neighboring colony, 8 feet away, is not likely to become affected. This apiary faces the east.

Another out-apiary has about 140 colonies in four rows. The first row faces the west, the second faces the east, so that the backs of the hives are 11 feet apart—just the right distance to run a cart or auto truck between. The third row faces the west, and the fourth the east. That makes two driveways 11 feet apart between the backs of the hives. The space for the bees to fly between rows two and three is 16 feet. By this plan, when going up and down the rows the bees do not get excited half as much. I expect to lay two lines of track in this yard, and have a car to run the supers of honey right into the honey-house, and then extend this apiary to 225 colonies.

I am just starting my third out-apiary. This will be the same—that is, I will provide it with tracks and a car.

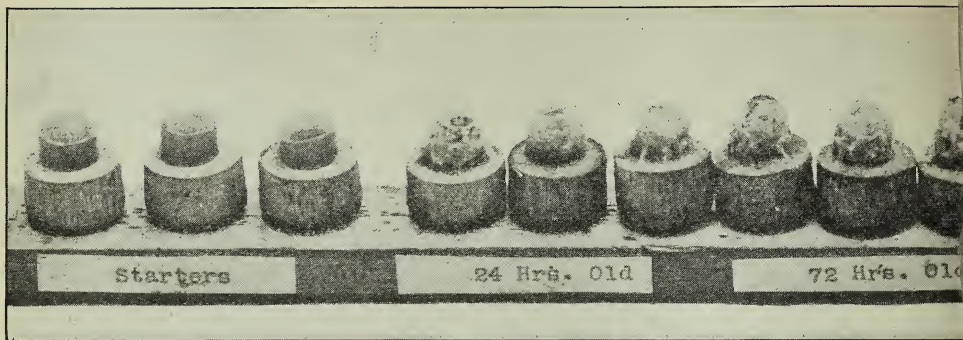
When I take off my honey, I go to the further end of the yard, remove the cover, puff in a little smoke to drive the bees down, take out all the honey that is at least three-fourths capped over. I shake all the bees from the frames into the super, not on the ground. All combs of honey not yet capped over I put in the center of the super. In this way I have no difficulty in keeping the queen from going up above to lay.

I use only eight combs in each ten-frame super. Of course I have ten in the brood-chamber, all worker combs built from full sheets of foundation. Eight bulged-out combs of honey contain more honey than nine or ten combs could hold in the same super. You see there are eleven bee-spaces with ten combs, and only nine with eight; in other words, there is just that much more room for honey.

Many a time I have taken off and extracted fourteen or fifteen 60-pound cans in seven hours, using only a two-frame extractor. I aim to extract every twenty-five days, and I am not bothered by swarming. I do all the extracting at each yard and take the honey home each night, and empty it into large tanks at home. Then when I have time I case it up.

I inspect all brood-chambers as soon as the honey starts in the spring, and then do not disturb them again until August, when I give another good inspection.

My apiaries are eight and nine miles from home. A light auto truck is the thing



Development of the queen-cell

for out-apiaries with a trailer when necessary. I move only the extractor and capping-melter from apiary to apiary. This year I expect to take a light one-horse wagon-gear, put on a flat top, bolt a four-frame extractor on one end, and the capping melter on the other. I shall remove

the shaft and put on a draw-bar; then when I move from one apiary to another, all I shall have to do is to trail the extracting-wagon behind the auto, run it right into the honey-house, and get busy. When the extracting is over I will wash up and go to the next apiary.

Arlington, Cal.

AS GLIMPSED THRU THE CAMERA

Some Common and Uncommon Sightings Among the Bees

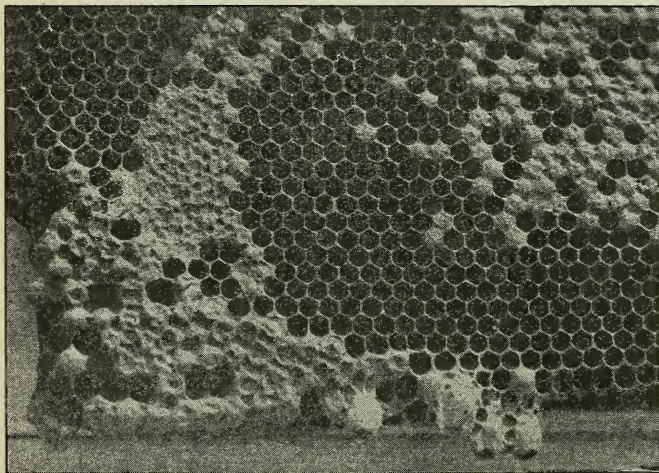
BY H. H. ROOT

That bees prefer the edge of a comb for building queen-cells is a well-known fact. That some bees, at least, refuse to build them anywhere else we discovered last summer, for the bees of one colony seemed determined to have their own way.

Wishing to observe and photograph the beginning of natural queen-cell construction we dequeened a colony, making sure

that the combs contained young worker brood in all stages. We kept careful watch of all the combs, beginning the next day, but found no sign of queen-cells until the fourth day, when we found a cluster of them started on the lower edge of one of the central combs. In each case the cells were constructed over drone-cells, and from all appearances the bees were innocently

proceeding to rear a queen from those drone larvæ. Of course, it is entirely possible that they had removed the drone larvæ and had put worker larvæ in their places. We watched the result carefully; but before the cells were sealed the bees apparently abandoned the undertaking in disgust. If they forgot to remove the drone larvæ I do not wonder that they gave up the thing as a bad job. But the weather was very changeable at the time, and the colony



Queen-cells built over drone-cells, and containing drone larvæ.



Development of the queen-cell from the transferred larva to the virgin.

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not overly strong, so that it is possible that the bees were unable to care for the cells, and that the larvæ in such an exposed place were chilled.

We carefully removed all traces of these cells, substituted another comb containing young worker larvæ, and gave the bees another chance; but, as in the first instance, they constructed cells again on one of the lower edges of the comb, and, as before, failed in bringing the cells to completion.

Bees prefer to build cells on the lower edge of a comb, not because of any desire to get the cells down near the floor of the hive, for in case of a double brood-chamber or a sectional hive the cells are just as likely to be on the lower edges of the upper comb. It is probably just because it is easier to build the cells down into an open space where there is no comb near by in the way.

The building of queen-cells makes an exceedingly interesting study. How all those bees engaged in the work are enabled to figure out the architectural problem in the building of the cells, caring for the larvæ, feeding them, keeping them warm, etc., is indeed a mystery. Instinct? Probably. But is not instinct really mysterious? In the work of bees we are shown wonderful results accomplished by a large force of individuals which carry out an intricate plan, but which work, nevertheless, without supervision. Probably the reason lies in the fact that all the bees share equally in the proceeds, and each bee has but one interest—the interest of her colony.

The second illustration shows the development of queen-cells from the time the tiny worker larvæ are "grafted" into the artificial cell-cups, to the empty cell from which the young virgin queen has emerged. It can be seen that, within twenty-four hours, the bees accept the artificial cells and grafted larvæ, and begin fashioning the outside to their own liking, meanwhile lavishly feeding the larvæ and clustering

over them, making it possible for them to grow. From six to eight days from the time the bees took hold of the work the cells are capped over, and, aside from keeping them warm and thinning down the wax wall toward the very last, the work of the nurse bees is over.

But within the cell the changes taking place are startling. The larva has been spinning its cocoon. The rapid change that

About two days
after hatching
from the egg.

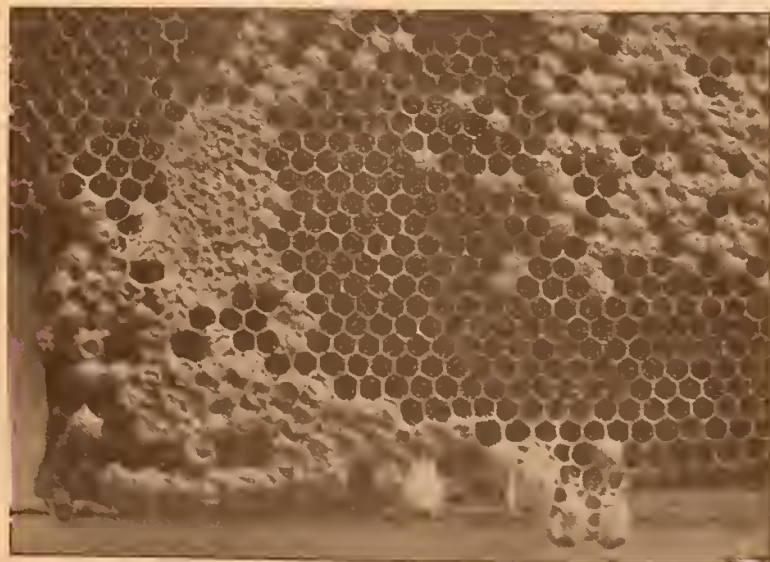
Four days
after hatching.

About seven days
after hatching.

Drone about 17 days after
hatching from egg.

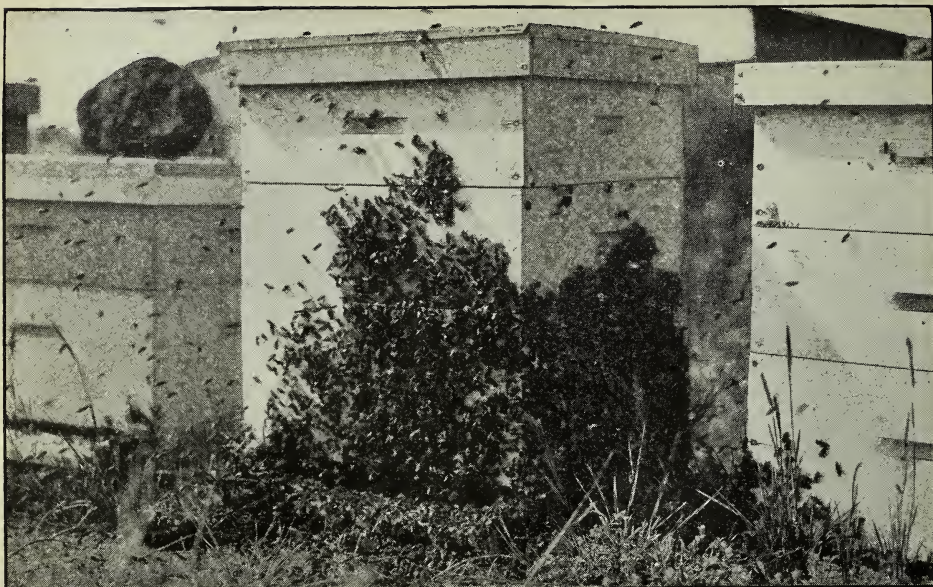
Twelve days
after hatching.

Larvæ and pupæ at different stages (enlarged).



Queen-cells built over drone-cells, and containing drone larvæ.

takes place, which may be seen almost hour by hour, is wonderful. The dividing of the segments of the larva into the three main groups that are to form the head, the thorax, and the abdomen; formation of the legs, and the wings; the beautiful tinges of color from the creamy white to the pink, then the red, then the purple, and, lastly, the brown,



Swarm returning to the hive because the queen was clipped. From A. G. LUCIER, Powers, Wyo.

are all beautiful examples of Nature's handiwork. Who can comprehend it?

The changes in the larvæ may be seen, but it is impossible to record them adequately with the camera; and by the time the engravings are reproduced on these pages only a faint suggestion is given of what any beekeeper may see with his own eyes without the least difficulty.

The first small illustration shows a worker larva somewhat enlarged, about two days after hatching from the egg. When first hatched the larva is almost as small as the egg itself; but by eating constantly its growth is phenomenal.

The next two small illustrations show worker larvæ about four and seven days respectively after hatching.

The next shows the result of the differentiation of the various parts. It is when observing this stage that one feels almost like a spy on the work of creation.

The last illustration shows a drone seventeen or eighteen days after hatching from the egg—that is, twenty or twenty-one days from the time the egg was laid, and therefore at least three days before the time of emerging from the cell. The head has begun to turn purple, and the color is extending down over the thorax and abdomen. The bony frame (chitin) is beginning to grow tough and strong, and the bee is rapidly approaching the time when it will waken—for the first time—and finally emerge from the cell weak and trembling, but perfectly developed—a finished specimen.

THE PREVENTION OF SWARMING IN HOME AND OUT-APIARIES

A Resume of Some Plans that have been Found Successful; Separating the Queen from the Brood

BY R. F. HOLTERMANN

With the exception of the wintering problem there is, perhaps, no subject which creates more general interest among beekeepers than the question of swarm prevention. I propose to give the substance of a number of plans that have been given to me, altho I realize that they may have been made public in one form or another before.

I myself have had a very fair measure of success in preventing swarming since having plenty of drawn combs for the surplus-honey crop; but I have never considered it wise to abandon the practice of looking thru the brood-chamber for queen-cells, usually once a week, and at least every ten days. Many times, it is true, I find such

an examination unnecessary; but there is no way of ascertaining this fact previous to the examination. On the other hand, colonies have been found with the swarming impulse week after week, altho I continue to break down the cells, expecting that the bees will cease rebuilding them. If I could have foreseen this I would have shaken the bees from the combs and removed the brood, because, as we all know, such a colony will not gather the usual amount of surplus honey.

At the Michigan state beekeepers' convention, held at Grand Rapids last December, I learned that this subject was to be taken up, therefore I attended the convention and interviewed several of the beekeepers whom I considered authorities on the subject.

FRANK SLUSHER'S PLAN.

Mr. Frank Slusher, of Traverse City, Mich., uses the ten-frame hive, and winters his bees in a cellar. They are set out on the summer stands some time during the first half of April. He usually carries them out at night and contracts all entrances to a space 1 inch by $\frac{3}{8}$. He thinks by this plan he is able to prevent drifting. He prefers cool cloudy weather the day following, if possible, in order to keep the bees from flying too freely.

Mr. Slusher does nothing with the bees after this until the weather is warmer, and more settled, or until about the time they begin gathering pollen. Then all colonies are examined; those that are queenless are united with other colonies, the queenless colonies being set on top. If a strong colony is queenless it is set over a weak colony, while if a weak colony is queenless it is set over a strong one. A queen-excluder is pushed between the two colonies, care being taken not to disturb either colony.

When examining the bees, the condition of the stores is noted; and, if short, a frame of sealed honey is supplied. If this is not available the bees are supplied with enough candy to last until fruit-bloom, after which, if more stores are needed, the bees are fed a thin syrup until they can gather sufficient from natural sources.

About twelve or fifteen days before the clover or raspberry flow, Mr. Slusher gives all colonies that are sufficiently strong a ten-frame super provided with drawn combs if he has them; if not, full sheets of medium brood foundation. The queen is allowed full range of both stories.

Nothing further is done until four or five days before the honey-flow when he takes from one to three or even four frames of sealed brood (or as nearly sealed as can be

obtained) from the strongest colony. These are distributed among the weaker colonies, or, if not needed for that purpose, are placed in the second story if the queen has not yet taken possession. Provided the queen has already taken possession, the brood is placed in a super which the queen has not yet entered. Frames of brood removed from strong colonies in this way are replaced by full sheets of foundation. Mr. Slusher thinks this is an ideal way to get foundation drawn out. If there is no need of having foundation drawn out, an empty worker comb replaces the comb of brood.

The bees are now left alone until a week or ten days after the flow begins. At that time, all colonies are examined. The cover of the hive is removed, several puffs of smoke given to drive the bees down between the frames, in the hope of getting the queen down into the brood-chamber. The super is then lifted off and a queen-excluder slid between it and the brood-chamber below, the brood above being left to hatch, thus giving the bees more room for surplus. Four or five days later, each upper story is examined, merely by lifting two or three of the center combs. If eggs are found, it indicates that the queen is above. The bees are then shaken in front of the hive and the combs replaced in the super. This is not often necessary, as the queen is generally driven below by the smoke before the excluder is put on.

After this time the work consists in seeing that each colony has plenty of room. As supers are added they are placed next the brood-chamber over the queen-excluder.

E. D. TOWNSEND'S PLAN.

E. D. Townsend, of Northstar, Mich., likes to have a limited amount of spring protection. He winters out of doors, altho last winter he had two apiaries wintering in trenches—that is, buried in sand. On account of limited help he usually begins unpacking his bees about the first of May. It takes perhaps two weeks to do this.

Mr. Townsend puts on the upper stories early, and disposes of the brood-chambers of dead colonies by putting them over the strongest colonies, where they answer the purpose of the first super. During the first manipulation he equalizes stores, providing these that are short with stores taken from those having more than enough for present requirements. He puts the upper stories on all colonies likely to need them within two weeks, not waiting for the brood-chambers to get full. With distant out-apiaries and limited help it takes about two weeks to go thru the bees.

Mr. Townsend objects to heavy packing

in May, because it makes the bees rear drones and get ready for swarming, drone-rearing being the first step toward swarming. Later on he judges by the action of the bees; and if they are likely to swarm he examines the combs for queen-cells. I asked him if he thought black bees showed more by their actions and entrance the tendency to swarm. He answered by saying that in his opinion they do show it more than Italians.

In the examination, if queen-cells are found he takes the queen with the poorest comb of brood and places them in a new hive on the old stand, the remaining brood being put on top of the hive with the super. If he desires to make some increase to replace lost colonies, he sets the brood, within ten days, on a new stand, making a new colony of it. He sometimes gives such a brood-chamber an entrance so that the young queens can get out and mate. In that case he puts a queen-excluder between the brood-chamber and the super beneath it.

DAVID RUNNING'S PLAN.

David Running, Filion, Mich., has taken bees out of the cellar as early as March 15 and as late as April 27. He likes to get them out as early as the weather will permit. He contracts the entrances at first to 2 or $2\frac{1}{2} \times \frac{3}{8}$ inches, enlarging them as the colonies get strong. The bees are left entirely alone until fruit-bloom, but he makes sure the fall before that all colonies have plenty of stores. When the apple-bloom comes on he considers the colony strong enough to take care of all the brood in an eight-frame hive. He then clips the queens and equalizes the stores. He does not equalize brood on account of the danger of spreading disease. Any queenless colonies are set on top of other colonies, as he does not consider them worth while maintaining for the surplus honey-flow.

The bees are seldom strong enough for a super at the beginning of fruit-bloom; but as soon as they do become strong an extra super is added without a queen-excluder. A week or ten days later, or at the beginning of the clover flow, when the bees have nicely started storing honey in the upper story, the queen is shaken into the lower story, a queen-excluder put over it, an empty super added, and finally the super that was over the brood-chamber, the colony thus being three stories high. About a week later, during the heaviest of the honey-flow, all combs in the brood-chamber are transferred to the top story, and foundation, or empty drawn comb, put in its place. If foundation is used, one drawn comb is

put in the center for pollen and eggs. The position of the other super is left unchanged, an empty super being left next to the queen-excluder. If the honey-flow later on does not appear to justify the last-named empty super, this is removed.

A week after the queen has been shaken down below the first time, Mr. Running cuts all the queen-cells out of the combs shaken. This is very important. If he can find time he breaks down the cells built in the second lot of brood in the top of the hive next the cover. If increase is wanted, he sometimes sets these upper stories on a new stand before the queens hatch. By this time he does not consider the cutting of the cells very important, because the honey-flow is about over.

If a poor queen is found this hive is marked and the queen changed as soon as convenient. Extracting is begun about ten days after the honey-flow ceases, the supers being freed of bees by means of bee-escapes. The brood-chamber and first super are left undisturbed until September 15, when feeding for winter is begun after the super is taken off.

It was Mr. Slusher, I believe, who said that he started the prevention of swarming by putting empty combs in the brood-chamber with the queen, and the brood in the super above the queen-excluder, but he found this to be unnecessary. In any case, all three of the foregoing beekeepers claimed that, by giving the queen of every good colony the opportunity to deposit eggs in the upper story, and later shaking her down and giving her plenty of range to lay in the lower story under the excluder stopped swarming, or at least reduced it to a very small per cent. They also agreed that, if the combs of brood above the queen-excluder including the queen-cells were raised up and an empty super put between, there would be practically no swarming. Mr. Running, however, favors the destruction of the cells before they hatch, or else he makes a distinct brood-chamber of them with a separate entrance. Heretofore in my own practice I have not provided for fresh room in the brood-chamber during the honey-flow. This feature should be a valuable addition to our fund of knowledge regarding the prevention of swarming.

S. D. CHAPMAN'S METHOD.

S. D. Chapman, of Mancelona, Mich., uses an eight-frame hive and winters in the cellar. He puts the colonies on the summer stand, weather conditions being favorable, about April 15. He selects a time when the prospects are that it will not be warm enough for a couple of days for the

bees to fly. However, he does not want the weather to be extremely cold. He finds that, if the bees fly at once, especially if the weather is pretty warm, the bees drift and mix up more than one realizes.

From the time of setting the bees out in the spring until the beginning of fruit-bloom Mr. Chapman leaves the colonies alone and does not disturb the sealed covers of the hives. At the time of fruit-bloom he puts on upper stories, letting the bees have sixteen combs, but he does not put a queen-excluder between. When fruit-bloom is on he goes thru the colonies for the first time, marking their condition as to their strength, amount of stores, and condition of their queen. At this time he also equalizes by taking combs of brood from some that are particularly strong and giving them to the weak. His object in equalizing is to make them all of the same strength so that they will require about the same treatment during the season.

About June 1, or at the very beginning of the raspberry flow, three combs of the matured brood are taken out of the brood-chamber and put into the super above, three good worker combs being put in the center of the lower brood-chamber. If the queen has entered the upper story at this time (and of course she is likely to have done so

if the colony is strong) he shakes her into the lower story and confines her there by means of a queen-excluder. He now has two stories with brood, and other supers are added for the surplus honey as needed, the bees never being allowed to become crowded. The first extra super is required usually in less than fifteen days, and this is placed between the two stories containing the brood. This must go between the two stories of brood and above the queen-excluder over the lower story, because the combs in the upper story will have queen-cells. With the cells so disposed of, Mr. Chapman finds that the colonies do not swarm when the young queens hatch.

By the above system Mr. Chapman also secures plenty of room for the queens to lay in the combs in the lower story, to which she is confined at the time the surplus raspberry-flow begins. Three combs are entirely empty at this time. Furthermore, if the colony is strong, and the queen goes into the upper story during fruit-bloom, and until the raspberry begins to yield, young bees will have been emerging from the cells in the lower combs, giving just that much more room when the queen is confined below. By this plan, at any rate, swarming is almost entirely prevented.

Brantford, Ontario.

BEE-NOTES FROM HOLLAND

BY J. H. J. HAMELBERG

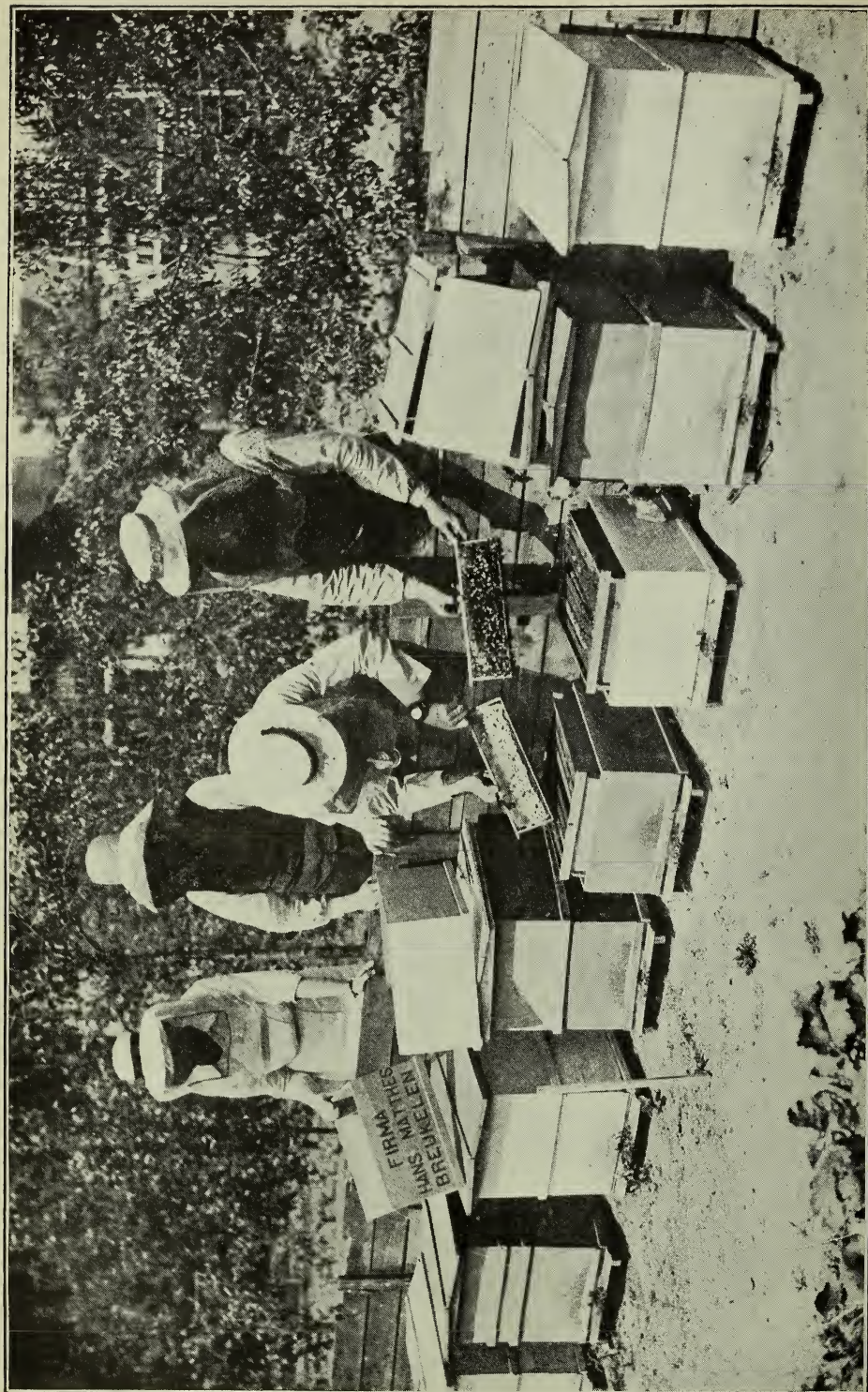
[This is the first of a series of articles on beekeeping in Holland. Later articles will discuss the question of hive and other equipment, the honey crop, wintering, etc.—Ed.]

With us the common black or German bee reigns supreme. Italians or Carniolans are exceptions; and as to Caucasians, Cyprians, Banats, and other species, I have never seen them in this country nor ever heard of any one keeping them.

A few amateurs may like to have a colony of Italians or Carniolans in their apiaries, and I know of one dealer in beekeepers' supplies who regularly orders Carniolan queens from Austria to be used in his own yard; but surely nine-tenths of all the bees kept in this country are pure blacks.

Altho preferring the Italians by far, I consider it wrong to condemn the blacks altogether. They are cross, undoubtedly, and they have a nasty habit of running over the combs when handling them; but they have some redeeming qualities. They cap their cells beautifully, and in gathering honey from the heather (an important source of winter stores in this country) I don't believe they can be equaled.

In judging the blacks (or, rather, *our* blacks) it must not be lost sight of that they are probably a good deal degenerated. For years—nay, even for centuries—it has been the custom of our beekeepers every year to sulphur their heaviest colonies—in other words, their best honey-gatherers; and it can hardly be doubted that this practice must have had a very deteriorating effect upon the race. I remember once having seen a very large skep in which a first swarm had been put in the month of June, filled to the very brim with beautifully built comb or worker-cells only. Except on the edges of the combs, no drone-cells were to be seen; and all the cells, except those in the two or three lowest rows of the combs, were beautifully sealed. It was in the latter part of September when I found this skep, and I would willingly have given a hundred guilders for this colony if the stupid beekeeper had not already sulphured it and its parent colony, also a very good one, as well. Such practices, continued for centuries,



Handling bees in a Dutch apiary. From Hans Matthes, Breukelen, Holland.

must have brought down the standard of our blacks.

But judicious selection and breeding may, perhaps, be able to give us a strain of bees unsurpassed for the conditions of our bee-flora and our changeable climate.

The principal objection raised to blacks in the United States seems to be that they are not immune to European foul brood. But this objection does not carry any weight with us, as this disease is, fortunately, but seldom met in this country—at least I have never heard of any cases in which apiaries were ruined by it, or nearly so, and I myself have never seen a colony affected by it.

What I have against the blacks is their habit of sacrificing honey-gathering to brood-rearing during the latter part of the summer flow. If, for the thoro ripening of the honey, supers are left over a colony of blacks, they will entirely empty them to rear brood, when a sudden stoppage in the honey-flow occurs at this time. Considering that their main winter stores must come from the heather (which blooms in August and September), the bees very likely only follow in this their natural instinct, trying to get as big a force of workers as possible for the autumn-flow. But it remains an objectionable habit all the same, which, however, may possibly be outbred.

The buckwheat-flow having failed us last year I had a striking instance of the superiority of the Italians. The one colony I have of them, altho not very strong in spring, gave me over 60 pounds of extracted honey by July 15, while my best colony of blacks (and one which, in the early part of May, had been judged "a magnificent stock" by one of our well-known practical beemen, Mr. R. Tukker, see *GLEANINGS* for October, 1908), gave me only 15 sections, most of which were only partly filled.

To be fair I must say that, when ordering this colony from Italy, I paid something extra to get a superior queen. The colony has never swarmed; and, altho always having done better than my blacks, the difference has never been so glaring as this year, buckwheat seldom leaving us in the lurch



In Holland a mouth bee-smoker is frequently used, which leaves both hands free for handling the frames.

altogether. But I hardly need to say that, at present, all my colonies of blacks have been provided with a queen reared from brood of this Italian stock.

I have one colony of Carniolans. I have had these bees for some years, but I do not like them. They stop work a couple of hours sooner in the day than either blacks or Italians, and they don't make up for this by rising any earlier. I cannot complain about their excessive swarming, as none of my colonies of Carniolans ever swarmed more than once in a season, and last year they did not swarm at all. With me they don't excel in honey-gathering, and have not proven themselves superior to the blacks in this respect. I consider them a lazy strain of bees.

Soest, Holland.

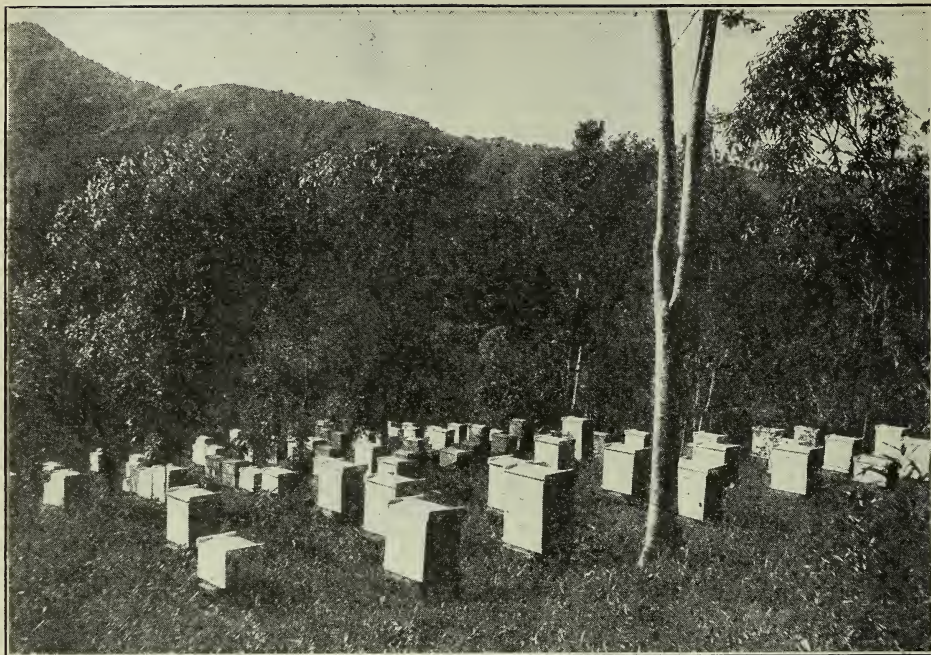
SOME OF THE NEEDS OF THE PORTO RICAN BEEKEEPER

BY RAFAEL VIDAL

Porto Rican beekeeping suffers from a general lack of knowledge of up-to-date methods. No fault can be found with equipment. It is modern and practical, but too many persons have gone into the business with a superficial knowledge of the subject,

and with the idea that all there is to keeping bees is relieving the workers of their honey at frequent intervals, and disposing of the crop at fancy prices.

There has been a sad awakening since the depression came, caused by the war. Prices



Typical Porto Rican apiary. The beekeeper of the tropics has peculiar problems of his own.

are low; the crop has not been an average one, and many of the smaller beekeepers are "climbing off the bee-wagon." All this will improve matters in the end for the large-scale apiarist.

One of the greatest needs of the Porto Rican beekeeper is a strong association which will procure supplies at a material discount to the individual, and regulate, to a certain extent, market prices, and stimulate a live and active interest in improved methods and better management. The interest is present, but it stagnates thru lack of opportunity to exchange ideas with men in the same line of business. A short-lived association published a small periodical which, undoubtedly, was a factor in helping the island beekeeper. Its discontinuance is to be regretted.

Another handicap to better beekeeping is the use of poor, nervous strains of bees. This has resulted, among other things, in the almost universal use of gloves and veils, a practice with which the northern apiarists have little patience. The discomfort of heavy gloves under a tropical sun may be easily imagined.

The lack of definite knowledge in regard to blossoming periods is another element hindering the insular beekeeper. Not only

do the various localities differ in this respect because of differences in altitude, rainfall, etc., but the blooming periods for the same locality are apparently so inconstant that only a very close observance of the flora will give an idea when a certain bloom may be expected.

These difficulties of the Porto Rican beekeeper are not offered as unadulterated pessimism, but only to show that the way of the tropical apiarist is not the primrose path so many people imagine as they recall such phrases as "luxuriant tropical bloom." The beekeeper in the tropics has peculiar problems of his own which, as everywhere else, must be met with patience, experience, and common sense.

The bloom in Porto Rico is heavy, but is apt to come on with a rush, giving the bees more work than they can handle. Among the principal honey-plants are moca (*Andira inermis*) and the leguminous trees so commonly used as shade in coffee plantations, guama (*Inga laurina*), and guava (*Inga vera*, not the guava of guava-paste fame). The guama is one of the best sources of pollen as well as the best honey-plant of the tropics. It blossoms from three to five times a year.

Mayaguez, P. R.

PENNSYLVANIA BEEKEEPERS MEET

BY GEORGE H. REA

The twelfth annual convention of the Pennsylvania State Beekeepers' Association was held in the Chamber of Commerce Hall, Lancaster, on Friday and Saturday, March 3 and 4. This proved to be one of the largest meetings of the association in point of attendance, and perhaps the most enthusiastic. Several things contributed to make it so. Perfect harmony prevailed thruout, and the contagious enthusiasm and zeal thrown into it from the start by Economic Zoologist H. A. Surface, president of the association, were probably the two most important factors in the success of the meeting. The secretary, Prof. H. C. Klinger, had the program so arranged that everything went off like clockwork. He was especially fortunate in securing the presence of all scheduled on the program, with one exception. The chief difficulty was in stopping the discussions on the important subjects in order to give sufficient time for the next number.

One of the notable features of this convention was the presence of several press reporters who stuck to their posts thru the sessions, early and late. As a result, complete reports of the convention were printed in various city papers. Some of the addresses were even printed in full.

Mr. L. B. Huber, chairman of the local committee, and his assistants, Samuel Gochenauer, E. S. Hacker, L. K. Hostetter, and Elmer J. Weaver, had everything in readiness for a warm reception for the visiting members. Mr. Huber, with his complacent smile and inherent good humor, was a prominent figure all thru the convention. He also contributed one of the most valuable papers given, entitled, "Constructive Farming and Beekeeping." He showed how one can practice better methods of farming while growing crops like the legumes and buckwheat that produce honey crops. Lancaster County is the richest agricultural county in the United States, having over 99 million dollars' worth of farm property and products. Mr. Huber, as one of its progressive practical farmers, spoke from experience.

Vice-president R. M. Reily, of the Chamber of Commerce, made the address of welcome. The kind hospitality extended by him was put into action by the local people.

Dr. H. A. Surface, in his annual address, said in part, "If, in the keen struggle for existence in the future, we are to compete with other nations we must be as economical as they. For example, it has been but recently announced that the German authori-

ties have issued a proclamation that the blossoms of various trees and shrubs, such as the alder, hazel, etc., should not be gathered for decorative purposes this spring, because, altho wild and uncultivated plants, they will furnish nectar and pollen for the bees, and, later in the year, yield nuts for the food of mankind. If the Germans, in their present stress, foresee the importance of such economy, can we not say that the beekeepers who are making it possible to gather and save the nectar from our various blossoms, and put it before the consumer in the form of honey, are performing a valuable service to mankind?"

Dr. Surface brought out the facts that in Pennsylvania there are about 22,500 persons keeping bees, with an investment of between one and two million dollars. About one million dollars' worth of honey are produced annually. He said, "There are at this meeting persons from more than fifteen counties scattered in different parts of the state. They represent the Pennsylvania Beekeepers' Association, which has the largest membership of any agricultural society in the state.

"It pays to advertise in local newspapers. There are no better educators in the country than the local newspapers. There are three hundred members of this association, and during this year each one in his own community should carry on a newspaper crusade to inform the public that there is a beekeeping industry in the locality; that there is local honey, local beekeepers, for the people like a local product best. Use printer's ink; do not be afraid of it; use lots of it."

He further urged that those in attendance should make notes on the good things said at the convention by the various speakers, and write them up for the local papers from time to time during the year.

The apiary inspectors, J. R. Rambo, John O. Buseman, and George H. Rea, reported 9384 colonies inspected in 1915, at a cost of about 20 cents per colony. In this connection Dr. Surface stated that he had records from owners of bees in certain infected territories, to the effect that their bees are doing much better since the services rendered by the inspectors. The educational value of apiary inspection is its chief merit.

Perhaps the most interesting feature of the whole convention was a paper entitled "Beekeeping a Hobby for Girls," read by Miss E. S. Brinton, of West Chester. [See page 393 this issue.—Ed.]

"Marketing honey" was handled ably by Mr. E. F. Strittmatter. Working the home market, the importance of neat and attractive packages, and personal canvassing, he gave as the main features of success. Advertising is very important, and satisfied customers are the best advertisement. Mr. Strittmatter has built up a large trade for his honey in tin and glass packages.

Dr. E. F. Phillips could not be present; but he was ably represented by his first assistant, G. S. Demuth. His talk on the four important periods to be taken into consideration by every beekeeper proved to be very interesting and valuable. These are: The late summer and fall period when the winter colony is reared; the winter period, or that of the conservation of the energy of the bees; the period of tremendous increase in the spring, and the period of the honey-flows.

During these periods, considering a normal colony with a good queen, etc., plenty of stores, protection, and room are necessary.

Queen-rearing, with its many difficulties and problems, was ably handled by Mr. J. R. Rambo and Mr. W. S. Sellers. Many valuable points in the producing of good queens were given to the beekeepers.

Three papers read before the convention, viz., "Getting Ready for the Honey-flow,"

by Mr. L. K. Hostetter; "Spring Management," by J. O. Buseman; and "Wintering," by Elmer Weaver, were full of good things, and had many valuable points taken from practical experience. The especial value of the fundamental essentials to successful beekeeping, good queens, lots of winter stores, and protection from cold, together with the proper manipulations at the right time, was emphasized.

"Habits of the Honeybee," by Economic Zoologist H. A. Surface, was the last number on the program. It is impossible to give a digest of this splendid paper, because of lack of space. Many fundamental truths necessary to be known by the beekeeper who would attain the highest degree of success, were presented by Dr. Surface, from the standpoint of a scientist as well as a practical man.

The election of officers was as follows:

President, Dr. H. A. Surface, Harrisburg.

First Vice-president, George H. Rea, Reynoldsville.

Second Vice-president, Mrs. Gertrude Weaver, Philadelphia.

Third Vice-president, R. L. Coons, Coudersport.

Secretary-treasurer, Prof. H. C. Klinger, Liverpool.

About sixty members were present, and as many visitors.

QUEEN-REARING FOR THE BEGINNER

BY J. E. JORDAN

SELECTING THE BREEDING-QUEEN.

Early in the spring, the first thing to think of is a queen to breed from. There are many points to be kept in mind in selecting a breeder, if one cares to improve his stock, build up a business, and make beekeeping an art. Here are the points to be remembered:

1. She must be pure.
2. Her workers must be gentle.
3. She should have made a record for prolificness and honey-gathering. (This should be recorded on the slate at the side of the hive.)
4. Her bees must be the least inclined to swarm under trying conditions.
5. If pretty yellow queens are desired their bees must have yellow abdomens. This applies to the three-banded Italians.
6. Her workers must be large as well as herself.
7. Her drones must be large and of good light color. These drones should have been reared in colonies which are also pure and have made a honey record.

8. It is desirable that her bees cap the honey white.

WHERE TO KEEP THE BREEDER.

After selecting the queen, the next thing is to get her on shallow frames or small frames in order to make grafting easier, also that she may be found more easily.

To transfer this breeding queen to another hive with shallow frames, get two shallow frames of honey, placing one on either side of the hive. Next put in four shallow frames of sealed brood and larvæ, being careful that all bees are brushed from them. Place one empty shallow brood-comb between each pair of combs of brood. Then cage the queen and lay the cage on the top of the frames, next go to the colony where the breeder came from and get two or three frames of young bees. These frames must be well covered. Brush the bees thru an empty super placed on the shallow-frame hive, down into the hive. Cover the hive and contract the entrance down to about an inch and let it stand for one or two hours; then release the queen. By adding an emp-

ty frame each day, or, rather, a frame with hatching brood in it, and putting it in the same place every time we always have larvæ to "graft" of the right size and age. Grafting—that is, transferring the selected larvæ to prepared cells—may be begun four or five days after putting the breeder on the shallow frames. Remember, even if the queen lays immediately after her release from the cage those eggs will not hatch for three days, and it will then be another 24 hours before the larvæ will be old enough to graft.

If the above work is done in the early spring, or when a flow of nectar is not on, do not neglect to put in a feeder and give the colony a little syrup each afternoon about sundown or after. This will cause the bees to feed the larvæ better; and well-fed larvæ are what we want. They must be floating in the milky food.

Two days before grafting, in order to have a cell-building colony ready, dequeen a good strong colony that is overflowing with young bees, and place in the hive a division-board feeder. Feed this colony every evening about sundown until the cells are sealed. Feed all cell-building colonies and the breeder about a pint of syrup if there is no flow of nectar. I always feed at sundown or after, as there is less danger of starting robbing at that time.

GRAFTING THE LARVÆ INTO THE PREPARED CELLS.

At the beginning of the season, as there is no royal jelly available, graft the first lot "dry." Do not expect great results with this first lot. Take the frame of larvæ from the breeder; and, after making sure that the queen is not on it, shake the bees before the entrance. With a grafting-tool lift the larva from the cell by sliding the point of the tool under it so that it will float on to the tool. The larvæ should not be over 36 hours old. Place a larva in the bottom of each cell cup, which cups should have been previously prepared and stuck on thin sticks. Eighteen cups should be on each stick. Now give this lot of 18 grafted cells to the queenless cell-building colony, hanging them in with the open ends down.

Care should be taken not to injure the larva in lifting it from the cell, as an injured larva means a bad queen. Also see that there are no fine particles of wax or dust in the cell cups. Be sure to graft as much as possible from the center of the comb, as drone larvæ will sometimes be found around the edges, especially the upper edge next to the top-bar.

After placing the cells in the queenless

colony, make a record in the record-book of the number of the hive in which the cells have been placed; also of the breeder, the date when they are due to hatch, and the number of cells grafted. Cells should hatch 12 days after grafting if the larvæ are the right size.

Now dequeen another colony to have ready for cell-building three days later. Don't forget to put a feeder in this colony also. In grafting the second lot of cells one will have better luck, as there is by this time royal jelly with which to "prime" the cells. Go to the colony which has the first lot of cells and cut off an unsealed cell which is well fed. Take this cell and extract the larva, throwing it away; then with a small paddle stir the royal jelly until it becomes of uniform consistency. With the paddle, lift out some of this jelly; and with a small round stick, which has a small cavity in the end, take a drop of this jelly and place in the bottom of every cell cup. One well-fed cell should contain enough royal jelly to prime from 36 to 54 cell cups. In hot dry weather sprinkle the floor of the building, and the jelly will not dry up so quickly.

After priming the cell cups with the jelly, repeat the grafting operation as before, placing a larva in the center of each cell, *on top* of the royal jelly. Place the lot of grafted cells in the second queenless colony, being careful to make the record as before. Always have a slate on the outside of the hive on which to write the date the cells are to hatch, and the number of lots or cells.

After the cells have been sealed they may be put in the upper story of some good strong colony to stay until ready to be distributed. The queenless cell-building colony will thus be available for use again. In placing the sealed cells in the second story of a colony with a queen, two well-filled combs of larvæ must be raised to the second story, and the frame with the sealed cells placed between them. A queen-excluder must be put between the super and the brood-chamber to keep the queen from coming up and tearing the cells down. The cells may be left in this super until two days before they are due to hatch. They must then be taken out, care being used not to jar or turn them upside down, and cut from the stick. Each cell should be placed in a West queen-cell protector. After you have them all in the protectors, and distributed, one cell to each nucleus, which you have already formed, they can hatch out in their natural way.

Hang a slate on each nucleus with the date the queen is due to hatch, written on it.

One or two days after the queen has hatched go to each nucleus and examine to see if the bees have accepted her, at the same time removing the cell-protector. If the queen did not hatch, leave the cell and mark it doubtful by putting the slate on the cover with some grass under it. Then examine it next day. If she has not hatched then, or the bees have killed her, lay the slate on top of the cover without the grass. This signifies that the nucleus is queenless and needs a cell or a queen.

Never give a cell to a nucleus that has run out of brood, as it is useless. The bees will always kill the queens. Provide a comb of larvæ from another hive, at the same time removing an empty comb. In from eight to ten days (in good weather) after the queen hatches she will be laying.

CELL-STARTING COLONIES.

After the queen-rearing work is well under way, and the stronger colonies have brood in the second stories as well as in the brood-chamber, select one or two good strong colonies which are handy to the workshop; dequeen them, and use them for drone hives and for starting cells during the whole season. These colonies must be kept well supplied with brood in all stages. As fast as a drone comb is filled with brood, give it to these colonies to care for. Graft the cells in the usual manner and place them in these colonies for one day. The bees will begin drawing out the cell cups and feeding the larvæ; then put the cells in an upper story of a strong colony with brood in both stories, but with the queen below an excluder. Shift the frames every time new cells are given, putting the frames which are empty below and raising the ones filled with larvæ above. These colonies will finish the cells perfectly.

Do not forget to keep the drone or starting hives well supplied with nurse bees. When the flow of nectar is over, and the bees in other colonies begin killing the drones, collect all of the brood and place in these drone hives. Then drones will never be lacking. To get drone comb, place an empty frame in the brood-chamber between two frames of brood, during a flow of nectar. Do not put starters in this frame. Always remember that an old queen will lay drone eggs sooner than a young one. Keep a record of the number of the colonies in which the drone combs are placed, so that they may be more easily found. A few seconds in making records will save hours of time, needless walking, and labor. Every two days destroy any cells which the drone hives start from their own brood. This is very important.

FORMING NUCLEI AT HOME.

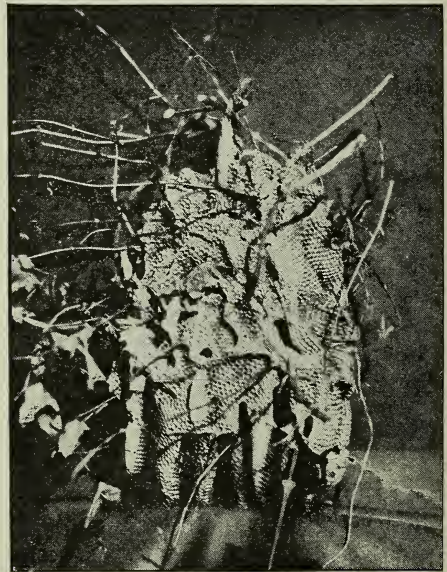
Take a frame of brood and a frame of honey, together with the adhering bees, and place both in a nucleus hive. Stop up the entrance, brush in half a frame of young bees and cover with a tight screen for 24 to 48 hours—in hot weather, never more than 24 hours. Then open the entrances and take off the screens after it is too dark for bees to fly. If this is done earlier, some will be lost and others robbed out.

Morgan, Ky.

MIGHTY POOR JUDGMENT ON THE PART OF THE BEES

BY RICHARD S. KIRCHBERGER

I have kept bees only a few years, and now have 8 colonies. This comb shown in the illustration was found about 150 feet from my hives, built in some wild shrubbery—absolutely in the open, with no protection whatever. It was built on a young



An unusual amount of comb for an outdoor colony.

wild black cherry and a wild honeysuckle. The weight of the comb pulled the branches down until the bottom of the comb touched the ground. The comb measured about 16 in. long by 12 wide. There was not a particle of honey left in it when found, and the bees, of course, were all frozen.

Highland Park, Ill.

Heads of Grain From Different Fields



THE BACKLOT BUZZER

Aunt Bertha Buckwheat says she doesn't believe it is possible to cross the bee with the lightning-bug so it will work nights, but she does think somebody ought to invent glasses for them so they could find a little more honey.

HMI

(There is nothing about bees in this. It is intended primarily for Don Marquis of the New York Sun, who, of course, will never see it, and, incidentally, for three other gentlemen who may.)

"It's so easy it's absurd,
Here a word and there a word—
Webster's done the work, you know?"—
Don Marquis admitted so.

So there's nothing left for the poet to do
But spend the best part of a lifetime or two
Feeling his subject deep down in his heart,
Forming and shaping itself to his art;
Throbbing, himself, with the pulse of the
thing,

Helping it grow and hearing it sing;
Nothing to do but put in and cut out,
Polish it up and turn it about;
Nothing to do but build a new phrase
With smoother or swifter or winsomer ways;
Nothing to do but listen and feel;
Make of one verse a sabre of steel;
Make of another a shaper of wills;
Make of another a call from the hills;
Make of another a murmuring rest;
Make of another a dream-haunted quest;
Nothing at all for the poet to do

But labor and love for that lifetime or two,
Yielding his part to a rhythmical whole,
Giving his brain and his heart and his soul,
Giving his life and giving himself,
And then get put on a separate shelf!

Nashville, Tenn.

Grace Allen.

Beeway or Plain Sections.

Dr. C. C. Miller:—Which is the best section to use—the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ inch plain, the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{8}$ -inch four-beeway, or the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ -inch two-beeway? I mean, which is the best in regard to swarm control?

I have ten colonies of bees; two colonies have three-banded Italian queens; the other eight colonies are the common black bees. Now, I want to Italianize the black bees, and on account of expense I want to raise my own queens. Is there any way by which I can keep the black bees from mixing with the yellow ones? How can I get the queens mated with the yellow drones?

Antioch, Okla.

Baxter Burnett.

I don't think either section you mention is the best. The one that is in more general use than any other is the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{3}{8}$ two-beeway. The fact that it is used more than any other, in spite of strenuous efforts having been made to push others ahead of it, is pretty good proof that beekeepers in general believe it best. So far as swarm control is concerned, I doubt if there's any difference.

So long as there are other bees within a mile or two of yours you will find it difficult to keep yours pure. You can, however, control the drones in your own apiary by allowing them to be reared only in Italian colonies. In other colonies you can keep the heads shaved off all drone brood as fast as it is sealed, or, better still, cut out all drone comb and patch worker comb in its place. One thing in your favor is that, when you rear a young queen from an Italian mother, even if the young queen mates with a black drone, the drones that she rears will be pure Italians. By persistently rearing queens only from pure mothers you will gradually work out the black blood. It may be well also to mention that the first cross will generally be found as good gatherers as the pure bloods.

Marengo, Ill.

Dr. C. C. Miller.

What is to be Done with the Froth?

What is usually done with the froth that accumulates on the top of extracted honey? Is it of any value?

Do bees that are wintered in a cellar have to be put back on their identical stands in the spring?

C. C. Brinton.

Turkey River, Ia.

[The froth that rises to the top of the honey is not of much use, altho it would not need to be thrown away necessarily. It

could be thinned down with water and fed back to the bees.

It has been definitely proven that colonies wintered in the cellar do not have to be put back on their former stands. After so long a time in the cellar the bees mark the new location very thoroly, and there will be no more mixing up than if they had been located where they had been the previous season. —Ed.]

They Just Ate 'Em Up.

A year ago last April I put on three supers of sections—one on each of three hives. Two of the colonies were strong, while the third was not so strong. Each super contained full combs (not foundation) that each colony had made the year before. The bees put nothing in them that year, and so last May I put the combs on again. When I looked thru them in June there was not a vestige of comb in either of the supers—not even propolis. What did they do with it? Work it over, down in the brood-nest? I never heard of nor read of the like before.

Colchester, Ill. J. C. Schaufele, M.D.

[There is just a bare possibility that mice may have gnawed these combs down, altho we think it is more likely by far that, being kept as long as this, the wax had become very dry and fragile, difficult for the bees to work. This would be especially true if the wax had been kept in a cold place during the winter. Under such conditions the supers, being put on in May, when the bees probably did not need the extra room, they amused themselves by gnawing out the combs. We know that bees will sometimes gnaw combs and gnaw foundation if it is given them at a time when they do not need it; but we do not remember to have seen a report of whole supers of combs gnawed away.—Ed.]

If at First You Don't Succeed—

Five years ago I cut a bee-tree; and as I did not know how to take the bees out I sawed the tree off at both sides of the cluster, nailed a board on both ends, stopped up the hole that the bees went in and out of, and then loaded it in a wagon and hauled it home to put in the orchard. They did not do well, however. I was young, and kept fooling with them till they left the stump and went to the timber.

I was determined to keep bees. The following year I got four or five more stumps of bees, and, of course, they did not make much honey that year, but they wintered all right in those stumps. The following spring an uncle of mine who was a beekeeper, and knew more than I did, helped me transfer one colony to a hive, and I transferred the rest.

I had better luck that year. The bees made considerable honey and increased to seven. Then I rented nineteen more for the next year for half the honey and half the

increase, but did not make anything. My share of the honey just paid for the supplies that I bought. I had only about 675 lbs. of honey that year with which to buy so much, as I was just starting out. My share of the increase, with my old colonies, made nineteen in all.

About that time I subscribed for *Gleanings*, bought books, and secured all the information I could. I did not keep the rented bees any longer, but kept my own bees. Last season my bees increased to thirty-three colonies and averaged fifty pounds of honey each, spring count.

I am going to build an extracting-room next fall if my bees do well. I have an extractor, and use a steam uncapping-knife, and run for both comb and extracted honey.

Willow Creek, Mont. Jay E. Huller.

No Division-board for Me.

If I were going to use ten frames I would dispense with the division-board and use two springs, one on each end of the frames, against the wood or metal spacers. There would be nothing glued fast then when the two springs were removed.

On the other side, there is no bee-space between the wall and frame so the bees would put in some bee-glue here, which would be a nuisance to overcome. Cut one metal spacer in two, and push the metal spacing-frame against it, and tack it fast. If using the Hoffman wooden spacer, then tack fast a thin piece of wood against the inside of the hive so a bee will have plenty of room to get thru.

Highland, N. Y. Victor G. Berrian.

Cats Have Nothing on Bees in the Matter of Lives.

A few days ago I was walking around in my apiary, and found one of my colonies dead, and most of the bees were on the bottom-board. I took off the cover to make an examination to see what caused them to die, and found that they had starved out. The temperature was 10 below freezing. I removed some of the frames and searched around for the dead queen, and brought her to the house to show her to a friend. I was grieved over the loss of my queen, but I laid her on the table, and the first thing I knew she was crawling up the window. I thought I would see what I could do with the rest of them, so I brought the hive into the house by the stove, and in a few minutes the bees began to move. I sprinkled some warm syrup on them, and in a few minutes they crawled up on the frames. I filled two frames full of syrup and kept them in the house two days, and in five days the queen had laid three frames of eggs. How long can a bee live after starving to death? I will never dump any more dead bees out on the ground in the winter until I know they are dead for good.

Roanoke, Va.

Henry S. Bohon.

A. I. Root

OUR HOMES

Editor

She hath done what she could.—MARK 14:8.

Their works do follow them.—REV. 14:13.

This woman was full of good works and alms deeds which she did.—ACTS 9:36.

In Our Homes for August 15, 1915, I gave an obituary notice in regard to the life of my brother-in-law, Mr. James G. Gray; and in that article I had considerable to say about his wife, my sister, Mrs. Eliza J. Gray. Little did I think when dictating that article that this sister, too, should so soon follow her husband. But as she lived to be 82 years old, we can thank God for the long life, and especially for the *good* life, she lived. I mentioned in that article that my sister began teaching school when she was only sixteen years old, and wearing short dresses; and she taught the school very successfully, walking out to it a couple of miles in the country, and back again at night. You may readily infer that she had considerable of what the world calls "grit" or she would not have thought of undertaking such a responsibility at such an early age. It was characteristic of her, not only in childhood, but all thru more than four-score years of life, to push ahead, especially when things in this world of ours did not seem to be what she thought they ought to be. In her lifelong disposition to do her duty, whether it hit friends and relatives or not, she sometimes made a mistake (like the rest of us), and therefore had *some* enemies as well as a host of friends.

When I was about twelve years old, a younger sister and I "went to school" to sister Eliza. I well recollect one afternoon when she had reproved me once or twice without doing much seeming good. I had a sort of idea that, as she was my sister, she would be a little lenient on that account. Finally, fixing her eyes on me she said, "Amos, you may take your books and go home and stay there until you can come back and obey the rules of the school."

I think I attempted some objection, knowing that my father and mother would insist on knowing the full facts in the matter. But she shook her head decidedly, and I obeyed orders. As I think of it just now, I feel ashamed to admit that I was *not* always a diligent pupil; but in that particular country school district there were some bad boys, and, I fear, some bad girls too, who needed a good wise teacher, and I began to catch the general infection somewhat. My impression is that my sister united with the church at quite an early age; but, like many other professing Christians, in time she became what might be

called more or less "worldly." But when the Woman's Crusade broke out she was one of the first to enlist, and she went into it with vehemence. At that time I myself was in the habit of taking a glass of beer occasionally, as I have heretofore explained. Mrs. Gray took me in hand so effectually that I do not think I have ever tasted beer since the crusade started in the spring of 1874.

By the way, Mrs. Gray has all her life been not only a kind sister, but has, at times, especially since my mother has gone, exercised a maternal influence over me. Now, please do not smile, any of you, when I give you just one illustration, as the moral may have a good influence over some of the newly married men and women of today. When Mrs. Root and I began life together we made our plans, which is the wise and proper thing to do. And among other things we thought it would not be best to be burdened with "little prattlers" right at the start. But we soon discovered, like many other young couples (at least I hope so) that often, altho "man proposes, God (in his loving kindness) disposes." Mrs. Gray came into our home one morning when we two, young husband and wife, were wearing long and despondent faces. When she inquired what the matter was, and had been told, she replied something like this:

"Why, you poor foolish young couple! a baby in the household will be the very best thing that *could* happen. If it should be a boy, that boy will be, in just a few months, the sunshine of your home and the delight of your lives, perhaps clear down to old age. Instead of looking sad and sorrowful, go down on your knees and thank God for this new revelation of his loving kindness and wisdom."

It proved to be a boy, and we called him Ernest; and he was in very truth a delight and joy to us and the life of our household. I have told you how I used to show him the pictures in the *Scientific American*, and explain them to him, before he could talk. His antics and boyish jokes kept us laughing until we had no time nor inclination to worry about finances or anything else. In fact, he used to get off jokes on both father and mother before he could talk. And, come to think of it, I do not believe he has got over that trick yet. Those of you who know him have probably seen him avert trouble by some droll remark that set everybody laughing, and made them forget their differences.

I will not attempt to tell you what Mrs. Gray has done in her lifelong work as an officer in the Woman's Christian Temperance Union; but I expect to give you something in that line a little later. Since her husband's death she made a trip all alone to a state convention, and she was the only member present of the old original crusade of 1874. Her picture appeared in many of the dailies and in the temperance journals. Below is a clipping from the *Medina Gazette*:

Mrs. Eliza J. Gray, one of the sainted mothers of Medina, died in Akron, Monday morning of this week. Mrs. Gray has for many years been one of the conspicuous figures of Medina, having more than a local name for her temperance and W. C. T. U. work.

Eliza J. Root was born of sturdy New England stock, the daughter of Samuel and Louisa Hart Root, being one of seven children. She was born Sept. 17, 1834. At the age of nine years she moved with her parents to Mogadore (near Akron). She was educated in the public schools, but her education was supplemented by self-culture all her life. At 16 years of age she began teaching, and was united in marriage to James G. Gray at the age of 19, Jan. 19, 1853. Mr. Gray was at the time instructor in Folsom's Commercial College, Cleveland. To this union four children were born.

At the time of the famous "Crusade" in 1874, Mrs. Gray, with her family, was living in Michigan and engaged in the activity of the work there, moving a little later to her present home, Medina. She has been state treasurer of the W. C. T. U., serving for three and one-half years, and state superintendent of the literature department many years. She also has been a most efficient superintendent of the Demorest contests in Ohio, retiring only on account of failing health, and a loyal supporter of the Prohibition party, bearing criticism and even social ostracism with remarkable Christian spirit. With time and money at her disposal, she used both at all times for the advancement of the cause to which she had given herself. She was a devoted member of the Congregational church.

Her death occurred just before our return from Florida. It occurred so near the time that we had picked on for our return that we knew nothing about it until we reached Medina on the morning of April 20. As the children gathered about us, after the greetings were over I remarked that I must run right down and see my sister. When they exchanged glances without replying immediately, my heart began to sink, and then some one said, "Amos, we are sorry to tell you your sister has been worse."

I replied, "Dear me! I shall have to hasten right down."

Then some one added slowly, "She has been very *much* worse. You cannot see her."

Then another one added, "Amos, your sister has gone to her reward."

As in the case of a former sister, I could not take it in all at once. I could not realize it. Many of you know, dear friends, how such things affect us, especially when we

are getting to be old; and it has now taken days and even weeks for me to *realize* my loss. When I am upstreet on some errand I almost unconsciously start to go down to that well-known home; and when I open my mail, without thinking I say to myself, "Oh there! Eliza must see that." And then somebody asks in a letter about some phase of the prohibition work where I am not well posted, and I say to myself, "I will just carry that letter down to Eliza, and she can give me all the facts in the case."

Of course, I thank God again and again that she was permitted to live a good long life, and that it was always a busy life. Eliza, as I firmly believe, directed all her efforts to benefit poor and ailing humanity. In the language of one of our texts, "She hath done what she could;" and the result of her earnest and busy lifework will follow on thru generations to come. And the concluding text well applies to Mrs. Gray. She contributed to temperance and missionary work thru all her busy life; and altho she earned quite a considerable sum in different ways, together with her good husband, if I am correctly informed it was practically all given to the benefit of humanity, thru different channels devoted to the cause of temperance.

FRICITION MATCHES; WHEN INVENTED.

Dear Mr. Root:—I know you wish to be accurate in dates as in everything, so I call attention to your second note, bottom of page 641, GLEANINGS for Aug. 1. You say "friction matches were not invented at that early day," etc., 72 years ago. The Century Dictionary, under "Friction Matches," says they were invented in 1827, and elsewhere that they were in pretty general use in 1830. I was born Feb. 11, 1837, and remember distinctly that they were cheap and plentiful in Hudson in 1842, and that my mother told of the days of her girlhood when they had none. Your people used coals as more convenient than matches for burning sulphur at the beehive, I presume, and not because there were no matches. I am three years older than you, but cannot remember when friction matches were not plentiful and cheap.

Hudson, O., Aug. 9. W. I. CHAMBERLAIN.

Many thanks, my good friend, for correcting my mistake. When I said "invented" I meant they had not yet reached our log house in the woods. I distinctly remember my brother going to a neighbor's to get a shovelful of coals because the fire was out; and I also remember later when father brought home some matches from town—the first the family had ever seen; and what a curiosity it was to see my father start a fire with the queer-looking things plentifully coated with brimstone as we discovered when we got too near! The roads were so muddy at that early day, and in such bad repair, that we did not get to town very often; and I fear we did not have a weekly

paper to tell us what was going on in the world. Later on I remember when Mr. Barber (father of the millionaire) had a match-factory between Akron and our Mog-

adore home; and my aunt Harriet worked for him. In fact, I am not sure but she was the first girl employed in Barber's little brick match-factory.

HIGH-PRESSURE GARDENING

SOME GLIMPSES OF OUR FLORIDA GARDEN.

Ever since I was big enough to get a look at things outdoors I have been interested in seeing things grow. My good mother was my first teacher in calling my attention to God's wonderful handiwork in making it possible for the tiny seeds to come to life and grow, and I believe I have always had a garden. I am particularly interested in plants that make rapid growth—especially so, since in Florida success with poultry depends largely on giving them a generous supply of green stuff for food. Two plants during the past winter have given me much gratification in the rapidity of their growth. The first is the collard. I believe they are grown largely in Georgia and further south. I am told they are a favorite with the colored people. Some time in February I sent by mail for one hundred collard plants. They started right up and grew in almost no time; and the severe drouth in February did not seem to disturb them a particle. As we had more plants than we had room for I set them in various places all over the garden; and in the poorest ground, with almost no fertilizer, they made great bushy plants in an astonishingly short space of time.

Figs. 1 and 2 show the collard. The photographer threw his hat down by the side of one so as to give an idea of the relative size of the plant, and you can see where I placed my hand on some of the foliage. Well, I have already pulled great armfuls of leaves from these plants for the chickens. I pulled off the lower leaves, of course; but

it seems the more leaves I pulled off, the faster they grew. Some of the midribs of the leaves were so large the chickens could



No. 1.—A Georgia collard, about sixty days after setting out the plant.

not readily break them up; but after they had eaten off the leafy part I took those midribs in my hands, holding as large a bundle as I could compass, and with a very sharp knife I slashed them in lengths of about an inch. In this way the chickens consumed every bit of the plant. Cut 2 shows two plants growing side by side.

The other plant I wish to mention is a radish I found in the catalog of the Burgess Seed Co., Galesburg, Mich. Here is a clipping from it.

SAKURIJIMA RADISH.

This is the giant radish from Japan. Often attains a weight of 15 pounds and sometimes 20 or 25. A great curiosity and a radish of extraordinary quality. Flesh solid, firm, and brittle, and of most excellent flavor. Planted in the spring, it keeps growing all summer, right thru the hottest weather, and never gets tough or pithy. Can be eaten during the summer, when it is difficult to grow other varieties, and can also be kept late in the



No. 2.—A couple more of the Georgia collards on comparatively poor ground.

winter if buried in sand. You will be pleased with it.

The upper picture shows one of the radish plants with its great bunch of foliage. The picture just below is the plant after I had pulled off a great armful of leaves. This radish, top and all, after being pulled up, weighed 13 lbs. The little holes in one side show where a hen and chickens picked into it. Well, the poultry will eat this great radish, top and all, every particle, if thrown out to them. The large mid-ribs in the leaves, also shown in the cut, have to be cut up in short lengths, as does the collard. Where you have many of them, and a great flock of chickens, you will need a cutting-box or vegetable-slicer. You may recall what I said a year ago — whenever you set a hen, sow some radish seed; and when the chickens are old enough to eat "greens" the radish will be up just right. I think this radish is going to be a nice thing for poultry-keepers.

I notice by another catalog that this great root is good for table use when cooked as we cook turnips, and I think this may be true; but I did not have an opportunity to try it after reading the notice. I did notice, however, that slices from the great root are remarkably sweet—more so than the common small radishes.

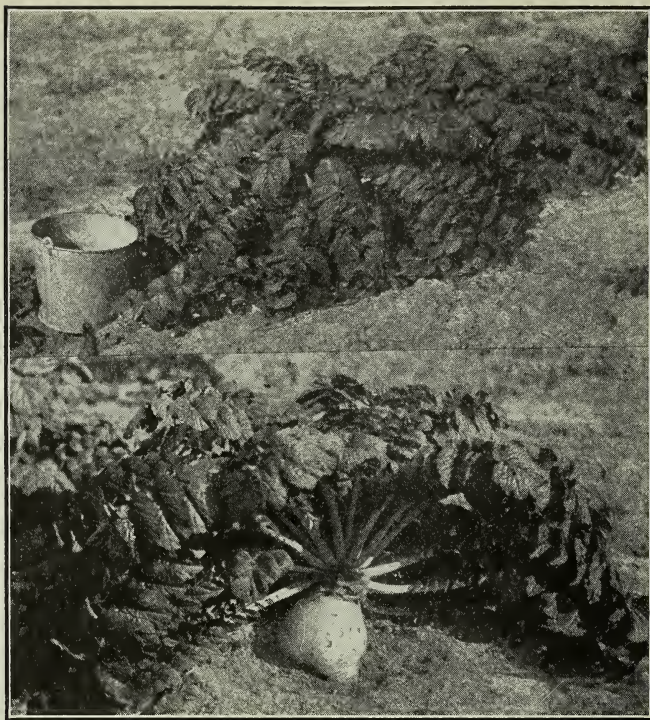
Since writing the above I find the following in the catalog of the Greenwald Seed Co., Lincoln, Neb.

SAKURAJIMA.

A Japanese radish of immense size. Some single specimens of this variety weigh as much as 15 pounds. In shape it is oval, with cream-colored skin and pure white flesh. Roots are cooked like turnips, but no strong taste accompanies them, such as is frequently present with cooked turnips. The plants should be thinned out to from 12 to 15 inches apart in the rows, so as to admit of full development; must be sown in May; takes whole season to develop roots.

SWEET CLOVER AGAIN.

An account of an experiment with sweet clover will disclose its valuable features. On the farm adjoining ours there appeared one year a heavy



No. 3.—Upper picture shows the plant before a part of the leaves were removed as in the cut below, to show how the root grows partly above and partly below ground.

growth of sweet clover covering about six acres. The owner of the farm saw no value in it, and offered it to us in exchange for a load of timothy from the field. We accepted the offer, and prepared to harvest it. The seeds had formed on at least two-thirds of the plants, and some of the stalks were as large as a man's finger, and over six feet in height. Nevertheless we cut it, drew it into a yard, and made two large stacks of it. Every pleasant day during the winter, cows, young cattle, and colts were allowed access to it, as much for the exercise, perhaps, as for the eating of it. Greatly to our surprise they evidenced unusual desire for it, eating it in preference to hay of better quality. They would nose around the bottom of the stack seeking the weeds; they would chew on the large woody stalks until an observer would think the yard was used as a dump ground for refuse rope material, as there were strings of fiber four to six feet in length lying around. All of the stock looked well, hair was shiny and sleek, and the colts were as lively as colts could be. The cows, too, continued to give good messes. Every bit of the two stacks was consumed.

The next spring the manure from the stock which had eaten the sweet clover, and the manure from where the stacks had stood was applied to a meadow that had a poor growth of timothy thereon. The grass started, and along with it appeared numerous tiny sweet-clover plants. These plants soon outgrew the timothy, and covered the ground, all from the seed which the manure contained. When haying was begun, that field was one of the first to be cut; and when it was cut, when about half in bloom, what a field of hay that was—one sea of green, and

a foot higher than the wheels of the mowing-machine. We did not allow it to go to seed as had the field of the preceding year, hence it was in fine condition—no large woody stalks at all. The clover was cured as red clover usually is, and with no loss of leaves. It was stored in the cow-barn, and fed the next winter to the milch cows. It was fed following alfalfa, and with no loss of milk, and not a bit of stalk remaining. The bitter taste that is ascribed to it did not seem to be there, as the cows ate every bit of it with very evident relish. As much milk was made from it as was made from the best clover or alfalfa we ever fed.

The yield per acre was certainly two tons of cured hay, and at no expense for plowing, fitting, or for seed. It was just a crop from the seed in the manure. This teaches us that if we raise it and feed it we must not allow it to mature, then feed it, and then apply the manure therefrom unless we want some sweet clover in that field. Hay buyers do not like it in the hay they buy, although they have bought it without adverse criticism. We have conclusive proof of its value as roughage for dairy cows, young cattle, colts, and horses, and advise any farmer having it on his land to give it a trial.—W. J. Hagar, King Hill, Idaho, in *Seed Sense*.

TEMPERANCE

A LETTER FROM ARTHUR CAPPER, GOVERNOR OF KANSAS.

We clip the following from the *Associated Prohibition Press Bureau*:

THE HOUR'S TREND.

The splendid message below from the executive of the great state of Kansas is most significant.

It shows that we are rapidly nearing a psychological hour of realignment and coalition for the great reform. Governor Capper's letter reads as follows:

STATE OF KANSAS
ARTHUR CAPPER, Governor.
Topeka, March 14, 1916.

Mr. F. D. L. Squires,
The Prohibition National Committee,
Chicago, Ill.

Dear Mr. Squires:—I have your letter of March 10. I am firm in the belief that the time is here when the best citizenship of this entire nation should combine in a movement to put the saloon from us for ever. We know that the saloon is making more human wreckage than all other agencies. Why should we, an enlightened people, a scientifically informed nation, continue to license this great curse, knowing it to be our greatest enemy, our greatest hindrance to national well-being, the greatest destroyer of thrift and happiness, the greatest promoter of vice, crime, and disorder, the greatest menace to the life of every boy and girl in the land, the greatest source of expense in government, and its most corrupting influence? Could anything be more reasonable, more sensible—more necessary—than national prohibition?

Very respectfully,
ARTHUR CAPPER,
Governor.

May God be praised that we have at least one governor who can come out thus boldly and squarely on the liquor question. How many other governors have we who are not afraid to stand by him?

ALMOST \$1500 A MONTH SAVED IN THE COST OF FEEDING THE PRISONERS IN JEFFERSON CO., ALABAMA.

The above saving came about by the smaller number of prisoners in the county jail after the county containing the city of Birmingham was made dry. See the clipping below, from the *American Issue*:

Sheriff E. B. Knight, of Jefferson County, the county in which Birmingham is located, presents the following figures in a letter dated April 1:

The total number of persons confined in the Jefferson County jail during the year 1915 was 1666 less than in 1914, the last year of saloons. The total number confined during the last half of 1915, the first six months under prohibition, was 725 less than that of the first six months under saloons, or 1487 less than the corresponding six months of the previous year under saloons.

From an economic standpoint it might be of interest to note that it cost the people of this state \$8975.40 less to feed the prisoners in the Jefferson County jail during the last six months of 1915 under the prohibition law than for the corresponding six months of the previous year under saloons, or a saving in this matter alone of \$1495.90 per month for Jefferson County.

Several thousand half-pint bottles of whisky were shipped from Cincinnati, Ohio, a few days ago to Birmingham. The whisky was packed in piano-boxes and billed as second-hand pianos. The consignment was seized, and Uncle Sam is now ferreting out the wholesaler who shipped the stuff. He can be prosecuted under several sections of the United States law.

After reading the above, just think of the absurdity of the statement of the liquor party that, if we do not have the saloon revenue, we cannot keep up our schools to educate our children! The cost of feeding prisoners is something, of course; but, dear me! what does the cost of *feed* amount to compared with keeping from 1000 to 2000 able-bodied men in jail for a whole year?

RUSSIA'S EMANCIPATION FROM ALCOHOLIC LIQUORS, ETC.

We take pleasure in clipping the following from the *Akron Beacon-Journal* of April 22:

RUSSIA TO WIN A DOUBLE VICTORY, SAYS AMERICAN IN CZAR'S SERVICE.

NEW YORK, April 22.—Dr. Philip Newton, an American who holds a commission of brigadier general in the Russian army in recognition of his work for the czar's troops, will leave here within a few days for the eastern theater of war. He takes with him fifteen ambulances presented by Americans to the Russian army. Dr. Newton looks forward to a double victory for the Russian empire when the present war shall have ended.

"Russia is already victorious in a war greater than the one she is waging with the central powers," said Dr. Newton. "This glorious victory was gained in a single day by the czar's order prohibiting the use of alcohol within his empire. Great will be the

toll of soldiers killed on the battlefields, but the number of people saved thru the abolition of alcohol will be much greater.

"The change for the better in the Russian people is manifested in many ways. For instance, the stress of war usually causes an increase in the number of insanity cases. War and absolute prohibition started about the same time in Russia, but the number of insanity cases has actually diminished since that time.

"Economically the change has worked wonders. This is forcibly demonstrated by the fact that since the beginning of the war the working classes have deposited a billion dollars in the savings banks of Russia. In the old days it was common for the workmen in factories to get drunk on Sunday or on any other of Russia's numerous holidays and waste a couple or three days recovering from the effects of strong drink. Now he is steady, works the entire week, and takes his wages home to his family. Both he and his family have more money than they ever had before, and so it is not surprising that the savings banks report many new depositors. Naturally the wealth of the country is increased by this great gain in the amount of work done.

"With brains cleared from the clouding caused by constant alcoholism, a decided mental development will occur in the peasant class. A logical result of this mental awakening will be a desire for greater knowledge. If the education of these people is conducted along sound lines, I do not think that the much-talked-of revolution will occur."

In view of the above, is it not strange that the United States of America does not seem to catch on and follow suit? May God be praised for what Russia has done for the whole wide world in the way of an object-lesson.

"READING BETWEEN THE LINES."

The Associated Prohibition Press Bureau sends out a sheet from which we clip the following:

United States Public Health Service has just issued a most commendable series of timely and seasonable suggestions to the citizens of America. They are issued under the general notation "Do You Know That—?"

We reproduce the text of this Bulletin below, with a brief suggestion as to the relation of its recommendations to the most important problem of health in our land today:

"DO YOU KNOW THAT—"

1. "Sags in roof gutters may act as mosquito-breeding places?"

True; and sags in civic conscience and civic government may and do act as breeding-places for the mosquitos of graft and the gnats of political corruption.

2. "America's most valuable crop is babies?"

Is that so? Then why vote longer for any party that protects the greatest baby-killer in the world's history?

3. "The public cigar-cutter is a health menace?"

And that public life-cutter—par excellence—the saloon, is the place where the cigar-cutter is usually found.

4. "The United States Public Health Service maintains a loan library of stereopticon slides?"

The slides ought to include a series showing the government partnership with the liquor traffic which is still destroying the health and besliming the environment of millions which this bureau is trying to help.

5. "The typhoid rate measures accurately the community intelligence?"

And the per-capita liquor consumption rate is a perfect thermometer of the public moral intelligence.

6. "Whooping cough annually kills over 10,000 Americans?"

Meanwhile 200,000 liquor saloons are making ten times 10,000 victims "cough up" daily until the most of them end by going on a "whooping" drunk. But that's no cause for excitement, of course.

7. "Bad housing produces bad health?"

And bad liquor (which is any kind of alcoholic poison) keeps millions badly housed.

8. "Rocky Mountain fever is spread by a wood-tick?"

But the whisky fever is spreading a thousand times faster than that with every clock-tick.

I wish to call attention to No. 4 in the above. Our nation's partnership with the liquor-traffic ought to be held up before our people and talked about and commented on until the head or heads of our nation get so wearied with our importunity that they will speedily wake up and do something. The expression, "besliming the environment of millions," hits the point exactly.

We clip the following from the *Methodist Episcopal Church Temperance Bulletin*:

BOOZE FOR BOYS! THE HOLLISTER DISTILLING COMPANY OF ST. PAUL CALLS FOR LISTS OF LADS.

The Hollister Distilling Company, at 129 East Third Street, St. Paul, Minnesota, wants the names of the little fellows in your town. If you will supply this list they will give you a quart of whisky.

The Martin County (Fairmont, Minnesota) *Sentinel* says that a rural mail carrier of that city has received a letter from the Hollister Distilling Company which says:

"I want the names of the boys in your town and on the rural routes. . . . I want as complete a list as possible, and a good list. If you will send me such a list I will send you your choice of a quart of old 1881 brand whisky or a quart of fine old imported Spanish Port wine. Get the postmaster to help you, also the bank cashier and the express agent."

The letter was signed by Elmer J. Jacobs, Manager.

When they say that "Prohibition doesn't prohibit," what do they mean? They mean that the American people do not have it within them to dominate the liquor evil. "Drink," they say, "is greater than your laws, greater than your constitutions, greater than YOU." Little do they know the exaltation, hot resolve, and burning determination of Columbia's heart this day.

Is it possible that there is no department of our government at Washington that can take up and punish an institution that sends out a circular like the above? May God help us when things come to such a pass that a distilling company is actually laying traps for our innocent boys.

A KIND WORD AFTER READING A SINGLE COPY.

I have read a copy of GLEANINGS, and it appeals to me as a first-class paper. I especially like Our Homes. Keep up the fight against the liquor traffic, as we need every bit of ammunition we can get hold of. The sooner we put this rotten business out of business the more God will prosper us. Billy Sunday has been down here preaching to Syracusans to give up "booze" and turn to Christianity. We have a much cleaner city by the work of this wonderful man. May God bless him and further him in his great work.

Syracuse, N. Y., April 1. FRANK M. WHITE.

BUY THE BEST

Why buy inferior queens when the best can be bought at the same price? You have heard of Dr. C. C. Miller's famous honey-gathering stock. How would YOU like to have a strain of bees like his? You CAN have. LISTEN, and we will tell you how.

We have made arrangements with Dr. Miller to furnish us breeders from his stock that has produced 266 sections weighing 244 pounds. These breeders are FINE. They are pure three-banded Italians, very gentle, and produce fine large daughters. Few people ever have a chance at the best in the world—so grasp this chance while you have it.

To inquirers:—I am rearing no queens for sale, but am keeping The Stover Apiaries supplied with breeders from my best stock; and from thence you can obtain the same queens you could get directly from me.

Untested, \$1.00; tested, \$2.00; Select Tested, \$3.50; breeders, \$5.00 to \$10.00 each; virgins, 50 cts. each; 12 for \$5; 25 for \$100.
3-frame nuclei.....\$3.25
2-frame nuclei.....\$2.25
1-frame nuclei.....\$1.25

Colony in 8-fr. hive, \$6.00; 10-fr. hive, \$7.00.

Prices of colonies, nuclei, and pound packages do not include queens.

| | | |
|---------------------|--------|---------|
| | 1 | 10 |
| 1/2 pound bees..... | \$1.00 | \$ 8.00 |
| 1 pound bees..... | 1.50 | 13.50 |
| 2 pound bees..... | 2.50 | 23.50 |
| 3 pound bees..... | 3.50 | 33.50 |
| 5 pound bees..... | 5.50 | 53.50 |

Queens of Our Strain.—Virgins, 25 cts.; untested, 75 cts.; 12 for \$8.00; 25 or more, 60 cts. Tested, \$1.25; 12 for \$13.50. Select tested, \$1.75 each.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI

WARDELL STRAIN OF ITALIANS

Descendants from the Famous Root \$200 Queen

I was head queen breeder for The A. I. Root Co. for a number of years, and during that time I originated the famous \$200 ROOT BREEDER whose stock has gone the world around. These bees for GENTLENESS, GENERAL VIGOR, and HONEY-GATHERING qualities have ESTABLISHED A REPUTATION. I have been for years developing and perfecting this same strain. While my prices may be higher than some others, my queens are cheap in comparison with their value.

| | | | |
|-----------------|---|---|---|
| Untested | - | - | during June, \$1.50; in July, August, and September, \$1.00 |
| Select Untested | - | - | 1.75 " " " 1.25 |
| Tested | - | - | 2.50 " " " 2.00 |
| Select Tested | - | - | 3.50 " " " 3.00 |

Delivery will begin about June 1.
Address all orders to

F. J. Wardell, Uhrichsville, Ohio

Italian Queens with a Record of 30 Years

Leininger's strain of Italian bees and queens have been carefully bred for 30 years; for gentleness and honey-gathering qualities are unexcelled; 95 per cent pure mating guaranteed. Queens ready June 1. Untested, each, \$1.00; 6, \$5.00; tested, \$1.50; 6, \$8.00.

Fred S. Leininger & Son, Delphos, Ohio

Queens and Bees

| | | | |
|-----------------------|--|--------|---------|
| | Three-banded Italians. Bred for honey and gentleness. | | |
| | 1 | 6 | 12 |
| Untested | \$.75 | \$4.25 | \$ 8.00 |
| Select Untested | 1.00 | 4.75 | 9.00 |
| Tested | 1.50 | 8.75 | 17.00 |

Breeders, \$3.00 to \$5.00.

If wanted with queen, add price.

Bees in 1-lb. packages, \$1.25, without queen.

Perfect satisfaction and safe delivery guaranteed.

N. Forehand, Fort Deposit, Ala.

ITALIAN QUEENS, NORTHERN BRED

are surely most hardy for Canada and northern States. Try one. Untested, \$1.00; select tested, \$1.50. List free. Plans "How to Introduce Queens, and Increase," 25 cts.

E. E. MOTT, Glenwood, Mich.

FINE - ITALIAN - QUEENS BY RETURN MAIL

Select Golden and Three-banded, lined to select drones; hardy, prolific honey-gatherers. Single queen, \$1.00; 2 queens, \$1.75; 3 queens, \$2.50; dozen queens, \$9.00. Six or more at dozen rates. No disease. Safe arrival. I positively guarantee every queen to give reasonable satisfaction.

Chas. M. Darrow, Star Route, Milo, Missouri

"THE DOOLITTLE PLAN"

of working out-apiaries is fully described in
THE MANAGEMENT OF OUT-APIARIES
by the well-known author, G. M. Doolittle,

This is the new title of "A Year's Work in an Out-apiary," by the same author. This is the fourth revision of this work on this topic of management of outyards. If you haven't a copy of former editions you should not fail to get this edition. Price 50 cts. Order now from the publishers.

THE A. I. ROOT CO., MEDINA, O.

PATENTS

Practice in Patent Office and Courts
Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building
WASHINGTON, D. C.

EUROPEAN FOUL BROOD

is spreading in various parts of the country. The first step in its cure is a vigorous strain of ITALIANS.

The Root Strain of Bees have shown Themselves to be Highly Resistant

While we do not claim their introduction will alone cure European Foul Brood, or that it will not make a start in their colonies, we have reports of where they have, with a little help, fought themselves nearly clean of European Foul Brood which was all around them in black and hybrid colonies.

These queens will be ready for delivery about June 1. Orders will be filled in rotation. Later in the season we will make delivery promptly.

PRICES.—Our regular price is \$1.50 in June and \$1.00 after July 1 for untested queens; but we will club them with Gleanings in Bee Culture for one year and a queen for \$1.50, provided we can fill orders for queens when we have a surplus of them. This will probably be July and August.

The A. I. Root Company . . . Medina, Ohio

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. . . Over 20 Years a Breeder.

| PRICES | Before July 1st | | | After July 1st | | |
|-----------------------|-----------------|-------|-------|----------------|-------|-------|
| | 1 | 6 | 12 | 1 | 6 | 12 |
| Select untested.... | 1.00 | 5.00 | 9.00 | .75 | 4.00 | 7.00 |
| Tested | 1.50 | 8.00 | 15.00 | 1.00 | 5.00 | 9.00 |
| Select tested | 2.00 | 10.00 | 18.00 | 1.50 | 8.00 | 15.00 |
| 2-comb nuclei | 2.50 | 14.00 | 25.00 | 2.25 | 12.00 | 22.00 |
| 3-comb nuclei | 3.50 | 20.00 | 35.00 | 3.25 | 18.00 | 32.00 |
| 8-frame colonies .. | 6.00 | 30.00 | | 5.00 | 25.00 | |
| 10-frame colonies .. | 7.50 | 38.00 | | 6.50 | 32.00 | |
| 1-2 lb. pkg. bees.... | 1.50 | 7.00 | | 1.00 | 5.00 | |
| 1-lb. pkg. bees..... | 2.00 | 10.00 | | 1.50 | 8.00 | |

BREEDERS.—the cream selected from our entire stock of outyards; nothing better. These breeders \$5.00 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out till first of June. Also nuclei and colonies, if wanted before June 1, add 25 per cent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

H. G. Quirin-the-Queen-breeder
Bellevue, Ohio



ITALIAN QUEENS THREE-BANDED

Ready April 1. Of an exceptionally vigorous and long-lived strain of bees. They are gentle, prolific, and the best of honey-gatherers. Untested, \$1.00; 3, \$2.75; 6, \$5.00; 12, \$9.00. Tested, \$1.25; 6, \$6.50; 12, \$12.50. Send for my free circular and price list, and see the natural conditions under which my queens are raised. Will book orders now.

John G. Miller, Corpus Christi, Texas
723 South Carrizo Street

THREE-BAND ITALIAN QUEENS

They are bred from imported mothers. They are the best for honey-producing purpose; very gentle, not inclined to swarm. If you buy once you will buy always. GUARANTEE that all queens will reach you in good condition, to be purely mated, and to give perfect satisfaction. All orders filled at once.

Untested, . . . April 1 to July 1, 1, \$0.75; 6, \$4.25; 12, \$8.00
Select Untested, . . . " " 1, .90; 6, 5.00; 12, 9.00
Tested, . . . " " 1, 1.25; 6, 7.00; 12, 13.00
Select tested, . . . " " 1, 2.00; 6, 11.00; 12, 20.00

L. L. Forehand, Fort Deposit, Alabama

If you are in need of bees, queens, or apiarian supplies, and want the best at a reasonable price, send for our catalog of 8 and 10-frame chaff hives, full colonies, nucleus colonies, or bees by the pound, shipped promptly. Tested Italian queens, \$1.50.

Untested, \$1.00.

I. J. STRINGHAM, 105 PARK PLACE, N. Y.
Apiaries, Glen Cove, L. I.



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Make money breeding PR squabs. 1910 demand biggest ever. Squab book free, telling money-making experiences. How to sell by parcel post. Start small, grow big. Many women customers. Write today. PLYMOUTH ROCK SQUAB CO., 815 HOWARD ST., MELROSE HIGHLANDS, MASSACHUSETTS.

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ELSEWHERE.—Zanesville service will yet commend itself to you as being the best obtainable.

The leading line of bee supplies, unsurpassed shipping facilities, years of experience, and painstaking care in packing and forwarding goods, fair and considerate treatment, all insure a degree of satisfaction that can scarcely be duplicated elsewhere.

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Your Honey Crop

Depends on Your Interest in Bees

The greater the interest, the greater the crop. Increase your interest by studying what happens in the egg. Here the individual bee begins life.

The Embryology of the Honey Bee

By Dr. Jas. A. Nelson

Price \$2.00 prepaid

Clubbed with "Gleanings" one year, \$2.75

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Address the Medina Office

When Ordering Supplies

remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Maine

J. B. MASON, Manager

St. Regis Raspberry

Bears from June until November.

Begins bearing same season planted. Colored plate and catalog giving full description sent on application. 1200 acres fruit plants and seeds. W. N. SCARFF, New Carlisle, O.

The Eyes, Ears, and Mouth are Near Together

To see birds, hear their music, and taste honey are a happy trio. . . .

There is a new and enlarged
Bird Department
in the
Guide to Nature

Send twenty-five cents for a four-months' trial subscription

Address: **ARCADIA, Sound Beach, Conn.**

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Our 1916 catalogs now out. Postal will bring you one. Root's goods at Root's prices. Prompt shipment.

E. M. Dunkel, Osceola Mills, Pa.

For New England

Beekeepers, we have everything you need in the way of supplies. Remember we are in the shipping center of New England. Let me send you a new catalog.

H. H. Jepson, 182 Friend St., Boston, Mass.

DAISY FLY KILLER



placed anywhere, attracts and kills alfalfa. Neat, clean, ornamental, convenient, cheap. Lasts all season. Made of metal, can't spill or tip over; will not soil or injure anything. Guaranteed effective. Sold by dealers, or 6 sent by express prepaid for \$1.

HAROLD SOMERS, 150 DeKalb Ave., Brooklyn, N. Y.

Quality Quickly

There's the reason why we maintain two western branches and warehouses. The convenience of lower freight and prompter shipments, coupled with the excellence of our bee supplies, have been realized by western honey-producers.

It is unnecessary to talk here about the type of supplies carried in stock at these two distributing points.

The Proof of Quality

Our exhibit at the Panama-California Exposition was awarded a grand prize and a gold medal.

This is California's
Decision

The A. I. Root Co., Los Angeles, Cal.

Geo. L. Emerson, Manager, 948 East Second St.

Where the Weed foundation-machines are making perfect non-sag foundation. Send us your wax to be made into foundation. We buy wax too.

Root Redwood Hives.—A sample hive body with cover and bottom KD, \$1.00. Quantity prices on application. We cut hive parts to order.

New machinery for manufacturing hives and frames has been added. Extractors are now shipped "knocked-down" from the factory at Medina.

The A. I. Root Co., San Francisco, Cal.

245 Mission Street

We have moved. Office and warehouse in the same building.
Write for catalog and send us your list of wants.

Classified Advertisements

Notices will be inserted in these classified columns for 25 cts. per line. Advertisements intended for this department cannot be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the classified columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

Fancy extracted clover honey at 9 cts. per lb. Sample 10 cts. JOS. HANKE, Port Washington, Wis.

FOR SALE.—Buckwheat honey at 7 cts. in new 60-lb. cans. C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

RASPBERRY HONEY.—Thoroughly ripened by the bees, very thick, and of fine flavor; in new 60-lb. tin cans, \$6.00 per can. We have a little slightly mixed with buckwheat at \$5.00 per can. Sample of either kind by mail for 10 cts., which may be applied on order for honey. Write for prices on large lots. ELMER HUTCHINSON, Rt. 2, Lake City, Mich.

HONEY AND WAX WANTED

Beeswax bought and sold. STROHMEYER & ARPE Co., 139 Franklin St., New York City.

WANTED.—Comb and extracted honey, in car lots and less car lots. J. E. HARRIS, Morristown, Tenn.

WANTED.—A small quantity of apple-blossom honey. Send sample, also price asked. Address A. I. ROOT Co., 139 Franklin St., New York City.

WANTED.—Your own beeswax worked into "Weed Process" foundation at reasonable prices. SUPERIOR HONEY Co., Ogden, Utah. "Everything in bee supplies."

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Circular-saw mandrels, and emery-wheel stands. CHARLES A. HENRY, Eden, N. Y.

HONEY LABELS.—Most attractive designs. Catalog free. EASTERN LABEL Co., Clintonville, Ct.

HONEY LABELS.—New designs. Lowest prices. Catalog free. LIBERTY PUB. Co., Sta. D, bx 4E, Cleveland, O.

Good second-hand 60-lb. cans, 25 cts. per case of two cans, f. o. b. Cincinnati. Terms cash. C. H. W. WEBER & Co., Cincinnati, O.

FOR SALE.—Cedar or pine dovetailed hives, also full line of supplies, including Dadant's foundation. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. Co., Greenville, Tex.

EASTERN MICHIGAN beekeepers especially are invited to send for my catalog of Root's goods and specialties. Try me for satisfactory goods, prices, service. ARTHUR RATTRAY, Almont, Mich.

FOR SALE.—Medium-brood foundation, 1 to 10 lbs., 52 cts. per lb. Up to 25 lbs., 50 cts. Up to 50 lbs., 48 cts.; 100 lbs., 48 cts. prepaid in La. Root's goods for sale. Beeswax wanted; 26 cts. cash; 27 trade. J. F. ARCHDEKIN, Bordoloville, La.

FOR SALE.—A lot of hives; supers for 4x5x1 3/4 sections or for shallow extracting frames. Must be sold. No reasonable offer refused. MRS. SNYDER, 121 Linderman Ave., Kingston, N. Y.

FOR SALE.—Beekeepers' supplies, such as winter cases, hives, sections, covers, bottoms, bodies, supers, brood-frames of every description, shipping-cases, section-holders, comb foundation, smokers, etc. Get my prices before placing your orders. R. H. SCHMIDT, Rt. 3, Sheboygan, Wis.

THE ROOT CANADIAN HOUSE, 185 Wright Ave., Toronto, Ont., successors to the Chas. E. Hopper Co. Full line of Root's goods; also made-in-Canada goods. Extractors and engines; GLEANINGS and other bee-journals; Prairie State incubators. Get the best. Catalog and price list free.

Honey extractors and tanks. Two 6-frame extractors, capacity 140 gallons, \$9.00 each. Old-style reversible, but not automatic; never been used. Baskets can be taken out and used for honey-tanks if desired. Also four extractor-cans from which reels have been removed; capacity, 90 gallons as honey-tanks; \$5.75 each. W. T. FALCONER MFG. Co., Falconer, N. Y.

SECTIONS \$2.85 PER THOUSAND.—*The Beekeepers' Review* is making a lead on sections, and furnish their subscribers with any make you prefer at from \$2.85 to \$4.50 per M. Order the same make of section as usual, but do not send us but \$4.50 per M. for the No. 1 grade, and 50 cts. less for the No. 2 grade. One make can be furnished as low as \$2.85 per M. for the No. 2 plain. *Do not buy a single supply* for the bees without first investigating our co-operative plan of buying. Write your wants to *The Beekeepers' Review*, Northstar, Mich.

PATENTS

PATENTS THAT PAY: \$600,812.00 clients made. Protect your idea! Send data. Advice and two wonderful Guide Books free. Highest reference. E. E. VROOMAN & Co., 834 F., Washington, D. C.

POULTRY

Some farmers in this locality have pure-bred eggs; 50 cts. for 15. Write FRED SALZMAN, Bedford, Ill.

White Indian Runner duck eggs for hatching. P. A. DAVIS, Rt. 2, Newton, N. H.

White Indian Runners and Mammoth White Pekin ducks, range bred, show stock, and prize winners. Eggs for hatching, \$1.00 for 13; \$2.00 for 30. E. B. BROWN, box 323, White Plains, N. Y.

FOR SALE.—Single and Rose Comb Brown Leghorn eggs for hatching, \$1.00 per 15, postpaid. Farm-raised stock. Also Indian Runner duck eggs, the white-egg strain. G. S. YOUNG, Rt. 1, Munson, Pa.

WANTS AND EXCHANGES

WANTED TO CONTRACT.—White sage bulk comb honey in carload lots only. Correspondence solicited. W. J. OATES, Los Flores Apiaries, Lompoc, Cal.

AUTOMOBILE.—20-horse-power roadster, just overhauled, new piston rings and new gears, to exchange for bees. Care of THE A. I. ROOT Co., 915 Walnut St., Des Moines, Ia.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1916. Our catalog and price list will be mailed to you free. Order early and get the discounts. C. E. SHRIVER, Boise, Idaho.

REAL ESTATE

FOR SALE.—Farm of 13 acres, 100 hives of bees, mostly double-walled; Hoffman frame, run for comb and extracted, in one of the best locations of Schoharie Co. For further particulars address owner.

E. J. DIENST, Gilboa, N. Y.

VIRGINIA, N. C., W. Va., and Ohio farms at \$15 per acre and up; offer big value for the price. Best climate, markets, schools, and transportation. Good land and neighbors. Write F. H. LA BAUME, Agr. Agt. N. & W. Ry., 246 Arcade, Roanoke, Va.

Twenty acres in San Joaquin Valley, California, in fruits, vegetables, alfalfa, with cows, pigs, poultry, and bees will pay you steady, substantial profits. Delightful climate, rich soil, good schools, churches, fine roads. Thrifty, hospitable neighbors. Write for free books. C. L. SEAGRAVES, General Colonization Agent A.T.&S.F. Ry., 1927 Ry. Exchange, Chicago.

FOR RENT.—80-acre farm, 60 clear; 6-room house and other buildings; 7-acre bearing orchard; 2-acre bearing vineyard. Suitable for apiary or anything you want to raise; 1½ miles to public school; 65 miles to St. Louis by railroad. Long lease to responsible party. Rent, \$100 per year.

E. BADER, 4109a N. Grand Ave., St. Louis, Mo.

MISCELLANEOUS

Quality Dahlias (northern grown). Send for catalog. MRS. E. L. G. DAVIS, Rt. 2, Newton, N. H.

ROZELLE SEED.—Plant Rozelle. Makes finest jam and jelly. Read Mr. Root's article in January GLEANINGS. Sample package, 25 cts.

H. KAY, Rt. 1, Pasadena, Cal.

BEEES AND QUEENS

Finest Italian queens. Send for booklet and price list. JAY SMITH, 1159 DeWolf St., Vincennes, Ind.

Try my MAPLEWOOD queens. Sure to please. One dollar each. GEORGE H. REA, Reynoldsville, Pa.

FOR SALE.—25 hives bees at \$2.50 each, in yard. S. V. REEVES, Haddonfield, N. J.

Three-band Italian queens, \$1 each; \$9 a dozen. EDITH M. PHELPS, Binghamton, East End, N. Y.

Italian queen-bees, \$1.00 each; tested, \$1.50. J. B. CASE, Port Orange, Fla.

Fine three-banded Italian queens. Circular and price list free. J. L. LEATH, Corinth, Miss.

Rhode Island Northern-bred Italian queens, \$1. Circular. O. E. TULIP, Arlington, R. I.

FOR SALE.—Full colonies Italian bees, Root 10-fr. hives, \$5 each. L. H. ROBEY, Worthington, W. Va.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York.

FOR SALE.—600 colonies well-kept bees. All modern equipment. Write WM. CRAVENS, Rt. 7, San Antonio, Tex.

Mt. Hamilton Apiary, Italian Queens. Untested, 75 cts.; tested, \$1.50 and up. CHARLES WOELZ, 360 N. Lincoln Ave., San Jose, Cal.

FOR SALE.—Three-frame nucleus with queen, \$2.50; 3 or more, \$2.25; on Langstroth frame; commence to ship May 15. W. H. STANLEY, Dixon, Ill.

HOLLOPETER's strain of Italian bees and queens will be ready soon. A postal brings promptly descriptive price list for 1916.

J. B. HOLLOPETER, queen-breeder, Pentz, Pa.

FOR SALE.—Northern-Ontario-Bee-Diseaseless District Bees. Hardest, healthiest. Prices will suit you. RAHN BEE AND HONEY CO., Haileybury, Ont.

Tested leather-colored queens, \$2.00; after June 1, \$1.50; untested, \$1.00; \$10.00 per dozen, return mail. A. W. YATES, 3 Chapman St., Hartford, Ct.

FOR SALE.—We offer to some one in this or nearby state, 50 to 300 colonies, 8-frame, first class.

THE E. F. ATWATER CO., Meridian, Ida.

FOR SALE.—Young laying queens, ready to mail, 1 to 100, 60 cts. each. Clean bill of health; 33 years' experience among bees. B. J. COLE, Fertilla, Cal.

Vigorous, prolific Italian queens, \$1; 6, \$5, June 1. My circular gives best methods of introducing. A. V. SMALL, 2302 Agency Road, St. Joseph, Mo.

Golden and three-banded Italians: 1 untested, 85 cts.; 6, \$4.80; 1 tested, \$1.25; 6, \$7.20. Satisfaction guaranteed. Bees, \$1.25 per lb.

D. L. DUTCHER, Bennington, Mich.

QUEENS OF QUALITY.—The genuine "quality" kind of dark Italians, bred for business. Guaranteed to please or your money back. Circular free.

J. I. BANKS, Dowlstown, Tenn.

H. C. Short, queen-breeder, formerly of Winchester, O., is now with W. D. Achord, Fitzpatrick, Ala. We will appreciate the patronage of Mr. Short's customers.

Now booking orders for three-frame nuclei, Italian bees and tested queen; delivery June 1, \$4 each. Low freight, quick delivery, satisfaction.

S. G. CROCKER, JR., Roland Park, Md.

Golden Italian queens about May 1. Select tested, \$1.25; tested, \$1.00; untested, 70 cts.; dozen, \$8.00; select untested, 80 cts.; dozen, \$9.00. No foul brood. D. T. GASTER, Rt. 2, Randleman, N. C.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1; 6 for \$5. WM. S. BARNETT, Barnetts, Va.

Golden Italian queens by June 1. Untested queens, 75 cts. each or \$8.00 per dozen; tested, \$1.25 each or \$12 per doz. Purely mated. Guaranteed. Send for circular. J. I. DANIELSON, Rt. 7, Fairfield, Ia.

FOR SALE.—Three-banded Italian queens and bees after May 25. Untested queen, 75 cts.; 6, \$4.25; 12, \$8.00; tested queens, \$1.25; 6, \$7.00; 12, \$12. Write for circular and price list.

ROBERT B. SPICER, box 181, Wharton, N. J.

FOR SALE.—Fine Italian queens and bees. Untested, \$1.00 each; 6 for \$5.00; dozen, \$9.00; \$60 per 100. For pound packages, see my large ad. in GLEANINGS for April 1 and 15.

J. F. ARCHDEKIN, Bordonville, La.

FOR SALE.—Good Italian queens, untested, 75 cts.; tested, \$1.00; nuclei, 2 frames, \$3.00; 1-lb. package, \$2.00; 2-lb. package, \$3.00, with untested queen. Will be ready to send out about April 1. G. W. MOON, 1904 Park Ave., Little Rock, Ark.

Order queens now for delivery by return mail; three-banded Italians, the business bee, and gentle; disease unknown in this locality; fully guaranteed. Untested, \$1.00 each; 6 for \$5.00; 12 for \$9.00.

M. F. PERRY, Bradentown, Fla.

Golden Italian queens that produce golden bees; the highest kind, gentle, and as good honey-gatherers as can be found; each, \$1.00; \$6, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Barnetts, Va.

NO QUEENS, UNTESTED, BEFORE JUNE. To my Customers:—I have all the orders I can fill for untested queens to June 1. The orders of those who want to send their orders for June 1, and after, I will take care of; but do not expect queens before June. Thanking all for orders,

J. B. BROCKWELL, Barnetts, Va.

GRAY CAUCASIANS.—Early breeders, great honey-gatherers; cap beautifully white; great comb-builders; very prolific; gentle; hardy; good winterers. Untested, \$1; select untested, \$1.25; tested, \$1.50; select tested, \$2.00. H. W. FULMER, Andalusia, Pa.

Let us send you price list and descriptive circular of our bees and queens, and if you will tell us what size and how many packages you may want, we shall be glad to write you what the express will amount to. R. V. & M. C. STEARNS, Brady, Tex.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; one frame with queen, \$2.00. Queens, 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginner's outfit for stamp. THE DEROY TAYLOR CO., Newark, N. Y. (formerly Lyons).

My bright Italian queens will be ready to ship April 1, at 60 cts. each; virgin queens, 30 cts. Send for price list of queens, bees by the pound, and nucleus. Safe arrival and satisfaction guaranteed.

M. BATES, Rt. 4, Greenville, Ala.

Carniolan, golden, and three-banded Italian queens. Tested, \$1.00; untested, 75 cts.; 6, \$4.20; 12, \$7.80. ½-lb. bees, 75 cts.; 1 lb., \$1.25; nuclei, per frame, \$1.25. No disease; everything guaranteed. Write for price list. C. B. BANKSTON, Buffalo, Leon Co., Tex.

Indianola Apiary offers bees and queens for sale for 1916 as follows: Tested queens, \$1.25; untested, 75 cts.; 1 lb. of bees, \$1.00; one-frame nucleus, \$1.25. Add price of queen if wanted.

J. W. SHERMAN, Valdosta, Ga.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SONS, Wilcox St., Binghamton, N. Y.

QUEENS.—Improved three-banded Italians, bred for business, June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10.00; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Rt. 3, Williamstown, Ky.

MULLIN'S UNRIVALED ITALIAN QUEENS.—Gentle and prolific, three-banded, and one of the best honey-gathering strains. After May 1 to July 1, untested, \$1.00; \$9.00 per dozen; special rates after July 1. Try one. You will want more.

O. S. MULLIN, Holton, Kan.

Three-banded Italians, ready after June 15. Will book your orders now with 10 per cent cash down. Queens, untested, 75 cts. each; \$8 per doz. Nuclei, 1-fr., \$1.50; 2-fr., \$2.25; 3-fr., \$3.00. Full colonies, \$7.00 each. EGGERS APIARIES CO.,

Rt. 1, Eau Claire, Wis.

Queens, ready in May. Northern-bred three-banded Italians, bred for gentleness, wintering, and honey-gathering. Select untested, \$1 each; 6, \$5.00; select tested, \$1.75 each. Send for price list and free booklet, How to Transfer, Get Honey, and Increase. J. M. GINGERICH, Kalona, Ia.

FOR SALE.—North Carolina queens ready in May. No better honey-gatherers reared. Beautiful, prolific; no disease; 80 per cent guaranteed purely mated. Untested, \$1.75; dozen, \$7.50; select untested, 1, \$1.00; 1 doz., \$9.00; tested, \$1.25; select tested, \$1.50; extra select, \$2. H. B. MURRAY, Liberty, N. C.

FOR SALE.—Early delivery of three-band Italian queens, pure mating, I guarantee. Any number for only 75 cts. each. These are bred from the best stock and by the best methods. No disease. We are better prepared than ever before to fill orders promptly. W. D. ACHORD, Fitzpatrick, Ala.

If you want a queen for that queenless colony, we can send it to you by return mail. Young tested queens, \$1.00, \$12.00 per dozen. Untested, \$1.00; \$9.00 per dozen. We breed the three-band Italians only, and we breed for the best. Our thirty years of queen-rearing proves this. We never had a case of foul brood in our apiaries, and we guarantee every queen sent out by us.

J. W. K. SHAW & CO., Loreauville, La.

Queens now ready. Golden and three-band Italian queens. I shall do my best to fill all orders promptly. If any queen fails to give satisfaction I will replace her free. Untested, 75 cts. each; six for \$4.00. Send all orders to

E. A. SIMMONS, Greenville, Ala.

A daughter of one of Dr. Miller's best honey queens, and the *Beekeepers' Review* for 1916 for only \$2.00. A daughter of one of the very best honey-getting queens selected from 1100 colonies worked for extracted honey, from the yards of E. D. Townsend & Sons, and the *Review* for 1916 for only \$1.75. The queens will be mailed in June direct from our breeders in the South. A rare buy.

THE BEEKEEPERS' REVIEW, Northstar, Mich.

Carniolan, Golden, and three-banded Italian queens. Tested, \$1.00 each; 6, \$5.40; untested, 75 cts. each; 6, \$4.20. Bees, 1 lb., \$1.25; 2 lbs., \$2.25. Nuclei, per frame, \$1.25; two-frame, \$2.25; eight-frame hive, \$6.50; ten-frame hive, \$7.00. Write for price on large orders. Everything guaranteed to reach you in good order. No disease here. Cash must accompany your order. Please mention GLEANINGS. I. N. BANKSTON, box 315, Buffalo, Tex.

Three-banded queens and bees by the pound, ready now. One untested queen, 90 cts.; \$9.00 per doz.; \$17.50 for 2 doz.; \$65.00 for 100. Tested, \$1.50 each; fine breeders, \$5.00 each; 1-lb. swarm with fine queen, \$2.25 each; without queen, \$1.50 each; 50 for \$70.00; 100 for \$135. Add queens at above prices. I can furnish you in any quantity from one to 1000 queens or swarms of bees at above prices from April 15, thruout the season. Write to Curd Walker, the Queen-breeder, your wants. He will give you a square deal. Box 18, Rt. 1, Jellico, Tenn.

Special for May, express prepaid on 10 or more swarms of bees in packages, at my regular price of 1 to 49, 1-lb. at \$1.50 each, and 2 lb. at \$2.50 each, and 50 to 500 of the above at 12½ cts. less each. Untested Italian queens, 75 cts. each; tested Italian queens, \$1.25 each. No reduction on quantity of queens for April and May. Quality, service, safe delivery, and no disease, I guarantee. We spare no labor nor money to produce the best for you is why we cannot make a lower price. Early swarms get the honey. We can deliver the goods with pleasure to both of us. W. D. ACHORD, Fitzpatrick, Ala., the successful package-shipper and queen-breeder.

BEEES AND QUEENS.—Doolittle's Italian stock speaks for itself. They are gentle, resist disease, and are fine honey-gatherers. We breed this stock only, and guarantee delivery only to points west of the Rocky Mountains. Untested queens, 75 cts. each; \$8.00 per dozen; \$60 per 100; tested queens, \$1.25 each; \$12 per dozen; \$85 per 100. Three-frame nuclei, \$2.25 each; \$200 per 100. Bees, ½-lb. packages, 75 cts.; \$6.00 per 100; 1-lb. packages, \$1.00 each; \$85 per 100. Add price of queens to above packages. Complete catalog free on application. SPENCER APIARIES, Nordhoff, Cal.

FOR SALE.—Three-banded Italian bees. Three-frame nuclei, with queen, \$3.00; without queen, \$2.25. We have more bees than we can manage, and can, therefore, supply you with the biggest and strongest nuclei you will be able to find anywhere. Send your order now, and money when you want them shipped. Can begin shipping April 15, or earlier, if necessary. Bees are all on standard Hoffman frames, and combs are all built on full sheets of foundation and wired frames. We guarantee bees to be free from disease.

THE HYDE BEE CO., Floresville, Tex.

This is the combination you have been waiting for: Your Dr. Miller queen introduced to a 2-lb. swarm; listen: Two pounds of bees, \$2.50; 1 Dr. Miller queen, \$1.50; the *Beekeepers' Review* for 1916 (we have the back numbers), \$1.00. Total amount, \$5.00. Send us only \$3.75, and your *Review* will begin coming immediately, and the two pounds of bees with a Dr. Miller queen introduced will be shipped by express in June. The reason we make this extraordinary offer is, we want to put the *Review* in the hands of every subscriber of GLEANINGS, and we take this way of introducing it to you. Address, with remittance, *The Beekeepers' Review*, Northstar, Mich.

Southwest Virginia five-band Italian queens, a fancy comb-honey strain; gentle to handle. They will please you. Try one. Untested, \$1.00; 6, \$5.00; 12, \$9.00.
HENRY S. BOHON,
Rt. 3, box 212, Roanoke, Va.

HELP WANTED

WANTED.—At once, young man to work with bees. Give age, and wages expected, in first letter.
M. C. SILSBEE, Rt. 3, Cohocton, N. Y.

WANTED.—Helper in apiaries. State experience, age, and wages wanted, in first letter.
MATHILDE CANDLER, Cassville, Wis.

WANTED.—Man with some experience as helper in apiaries of 400 colonies. Please give age, experience, and salary expected in first letter.
JOHN B. AHLERS, West Bend, Wis.

WANTED.—Industrious young man of clean habits as helper in my beeyards this summer; will give results of my experience, board, and fair wages. Give age, weight, experience, and wages in first letter.
E. L. LANE, Trumansburg, N. Y.

WANTED.—Industrious young man, fast worker, and of clean mental and body habits, as a student helper in our large bee business for 1916 season. Will give results of long experience, and board and small wages. Give age, weight, experience, and wages in first letter.
W. A. LATSHAW Co., Clarion, Mich.

TRADE NOTES

Mr. H. C. Clemons, one of our advertisers, has moved from his old address at Boyd, Ky., to Rt. 3, Williamstown, Ky.

JAPANESE BUCKWHEAT.

We have available at Ashland, Mo., and subject to previous sale, twenty bushels of nice Japanese buckwheat which we offer at \$2.75 per 100 lbs., \$1.50 per bushel of 50 lbs., bag included. We have also here at Medina a limited amount of this variety as well as of silverhull, which we offer, while it lasts, at the same price. If in no def seed send in your orders while the supply is available.

PRICES ADVANCED ON VARIOUS ITEMS.

We announce the following advances in price of various articles listed in our catalog for 1916, to take effect from and after this date:

Beehive paint, \$2.75 per gal.; \$1.40 per half gal.; 75 cts. per qt.; 40 cts. per pint.

Tinned wire, $\frac{3}{4}$ -oz. spool, 4 cts. each; 5-lb. coil, \$1.20.

Crate staples and end-space staples, 20c per lb.
Three-wire strips for honey-boards, 18½ in. long, \$2.50 per 100.

Seven-wire strips for honey-boards 18½ in. long, \$5.00 per 100.

No. 3 eight-frame, 7-wire-and-wood honey-boards, 13¾ x 20, \$4.00 for 10.

No. 4 ten-frame 7-wire-and-wood honey-boards, 16¼ x 20, \$4.50 for 10.

No. 7 ten-frame 3-wire-and-wood honey-boards, 16¼ x 20, \$4.20 for 10.

No. 8 eight-frame 3-wire-and-wood honey-boards, 13¾ x 20, \$3.70 for 10.

These advances are made necessary by increased cost of materials, and a corresponding advance is made in the wholesale and jobbing prices. Other advances on metal goods will be announced in the near future.

SECOND-HAND FOUNDATION MILLS.

We have to offer the following list of foundation machines which have been used but are in fair condition. In many cases they will answer as well as a new machine where you have only a moderate output. Send for sample of foundation from any mill in the list which may interest you.

No. 0153, 2½ x 6 hexagonal thin-super mill in very good condition. Price \$14.00.

No. 0156, 2½ x 6 hexagonal extra thin-super mill in fair condition. Price \$10.00.

No. 0165, 2½ x 6 hexagonal extra thin-super mill in fair condition. Price \$10.00.

No. 0183, 2½ x 6 hexagonal thin-super mill in very good condition. Price \$14.00.

No. 0214, 2½ x 10 hexagonal light-brood mill in poor condition; rolls quite badly pitted; will make fair foundation. Price \$13.00.

No. 0230, 2½ x 10 hexagonal medium-brood mill in fair condition. Price \$18.00.

No. 0233, 2½ x 10 hexagonal medium-brood mill in poor condition; cells bruised. Price \$14.00.

No. 0234, 2½ x 6 extra thin-super mill in very good condition. Price \$12.00.

No. 0237, 2½ x 6 thin-super mill in fair condition. Price \$10.00.

No. 0238, 2½ x 6 thin-super mill in fair condition. Price \$10.00.

No. 0239, 2½ x 10 medium-brood mill, hexagonal cell, in fair condition. Price \$18.00.

No. 0241, 2½ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.

No. 0242, 2½ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.

No. 0243, 2½ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.

No. 0244, 2 x 10 round-cell medium-brood mill in good condition. Price \$14.00.

No. 0245, 2 x 10 hexagonal medium-brood mill in very good condition. Price \$18.00.

No. 0246, 2½ x 10 hexagonal medium-brood mill in good condition. Price \$20.00.

THE A. I. ROOT COMPANY, Medina, Ohio.

SPECIAL NOTICES

BY A. I. ROOT

PLANT PROPAGATION; GREENHOUSE AND NURSERY PRACTICE.

The above is the title of a new book dated March, 1916. It contains 322 pages and 213 illustrations; so you see there are "pictures," one or more, on nearly every page in the book. This work is an attempt to take in every improvement up to date in the way of propagation of plants. I was pleased to see three pictures that looked familiar, and I found they were furnished by my good friend E. N. Reasoner, of the Reasoner Brothers' Palm Nursery, Onea, Fla., close by our Florida home. In early childhood when my mother taught me how to plant seeds and watch them grow I was delighted. Later on, when I found certain plants could be grown without seeds I was still further delighted. You know how a woman grows geraniums and other plants from "slips." Well, this book is largely devoted to propagating by layers, grafting, inarching, etc. Short cuts and improvements in the propagation of plants are advancing so rapidly that it is a hard matter to know all about what is going on in the world, especially the greenhouse world. But Prof. M. G. Kains (Professor of Horticulture in the Pennsylvania State College) has done his work remarkably well. The book is published by the O. Judd Co., of New York. The price is \$1.50.

SOME GOOD BOOKS FOR A SMALL SUM OF MONEY.

In rearranging our office and stock of books on agriculture, etc., we found 15 copies of a book that made quite a sensation in 1885 and later. The title is "The Waters Led Captive." The book is devoted to a sort of sub-irrigation. Its author was an enthusiast, and, as has often happened, put, perhaps, an extravagant estimate on his invention, or, perhaps, we might say, discovery. The plan was to make a sort of subterranean reservoir to hold water. This was filled with stones up to a certain height, and on top of the stones were put brush, straw, weeds, or anything that would rot and make humus; and on top of the brush and straw some stable manure. The ground was then filled up with soil. The theory was to permit the roots of the growing plants to go down thru the humus, brush, etc., and help themselves to water. In a clay soil water would almost always be found in these underground reservoirs more or less. With such an arrangement

I grew the finest melons and squashes I ever grew in my life. I made quite a success of it until the growth of our factories compelled us to dig up my "new agriculture." Father Cole claimed that the great trees of California were the product of underground water on a similar scale built by nature's handiwork. The book gives full directions, and is fully illustrated, with plans for the new agriculture in every back yard or dooryard. For many years we had a most excellent garden over these reservoirs. I hardly need add that slop from the kitchen, and sewage of every sort, can be turned into these reservoirs; and growing trees, especially fruit-trees of all sorts, respond wonderfully to such treatment. The price of the book was \$2.00; but for the sake of closing out the 15 copies left on our hands (by accident) we will make the price \$1.00 as long as they last.

One other book we have left is entitled "What to Do, and How to be Happy While Doing it." This book was put out in 1888, and is devoted mostly to market-gardening. It also has much to say about the "new agriculture." It tells how I managed and how I succeeded in astonishing Medina Co. and a good many other places by the possibilities of "high-pressure gardening." An appendix to bring the book up to date was put out in 1900. Many of our readers are doubtless familiar with this book. Quite a number of successful market-gardeners and florists who have built up a great business got their first start from the book "How to be Happy," etc. I remember one young man who became so enthused with it that he used to go over to see his "best girl" before they were married and read the book to her. Since then they, too, have built up a great business in the floral line. I refer to S. W. Pike, of St. Charles, Ill. We printed so large an edition of this book years ago that we have 1000 or more copies still on hand. The regular price of the book, cloth bound, was 50 cents; paper, 35. It contains 206 pages, and is fully illustrated. While the edition lasts we will make the cloth-bound copies 25 cents, postpaid; the same bound in paper, 15 cents. Or anybody who sends \$1.00 for GLEANINGS may have the latter postpaid as a premium; or anybody who sends us \$1.00 for a new name may have the cloth-bound copy postpaid as a premium.

A KIND WORD IN SPITE OF LOSS OF BEES.

I suppose "Pa Root" will soon be back with you again. Long may he live to carry on his work. Heaven bless him and you all. We have had a bad winter and very late spring. I suffered nearly a 50-per-cent loss in stocks this winter.

WM. WRIGHT.

New Westminster, B. C., April 20.

A KIND WORD FROM AWAY OFF IN CANADA.

I can hardly write on account of looking at the beautiful snowfall without. The snow is almost up to our window sills, and is as fluffy as down. The spruce and pine look like so many umbrellas with their limbs bent touching the snow beneath. It is a scene well worth any artist to paint. You might tell A. I. Root that Florida "isn't in it" for health and beauty compared to northern Ontario. We can enjoy two things at the same time, while he can have but one. We have the cold dry bracing winds without, while at the same time we enjoy the warm Florida weather by the fireside.

130 DUCK EGGS WITHOUT A MISS.

Our Indian Runner duck began laying the last week in February, and laid 130 eggs without stopping. The last day she laid two eggs. One of them had a soft shell. Altho I hatched several settings, the bees killed every one of them. The ducks would persist in going to the hives and rattling around the entrances with their bills.

"One man's meat is another man's poison." While A. I. Root enjoys his meals of fruit we enjoy our meals of flesh. We cannot raise apples, plums, or peaches successfully, but we can raise beef, mutton, and eggs, while our waters teem with fish and our woods abound with game. The man in the South eats fruit as a cooling food. The man in the North eats meat as a heating food. "Let not him that eateth despise him that eateth not." I think the trouble lies, not in what we eat, but that the most of us eat too much.

J. M. MUNRO.

Slate River Valley, Ont., Jan. 13.

Be Efficient in BEE CULTURE

Grasp the experience of others in beekeeping by reading the best that has been published. The pamphlets and books listed below compel interest. Place a X in the margin opposite the publication wanted.

- ☐ THE DEVELOPMENT OF THE APPLE FROM THE FLOWER. By O. M. Osborne. Here's the latest scientific information about why apple blossoms can not do without bees. Free.
- ☐ MY FIRST SEASON'S EXPERIENCE WITH THE HONEYBEE. By "The Spectator," of the Outlook. A leaflet humorously detailing the satisfaction of beekeeping. Free.
- ☐ CATALOG OF BEEKEEPERS' SUPPLIES. Our new complete catalog mailed free to any address on request.
- ☐ THE BEEKEEPER AND FRUIT-GROWER. Do you know that bees are necessary in modern fruit culture? This 15-page booklet tells how beekeeping is doubly profitable to the fruit-grower. Free.
- ☐ SPRING MANAGEMENT OF BEES. The experience of some successful beekeepers on solving this perplexing problem. Price 10 cents.
- ☐ THE USE OF HONEY IN COOKING. Just the thing for the up-to-date housewife. Price 10 cents.
- ☐ BEES AND POULTRY, how they work together profitably for others—why not for you? Some valuable pointers on hens and honeybees. Free.
- ☐ HOW TO KEEP BEES. A book of 228 pages detailing in a most interesting manner the experiences of a beginner in such a way as to help other beginners. Price \$1.00 postpaid.
- ☐ THE A B C OF BEE CULTURE. A standard encyclopedia on bees. The largest and most complete published anywhere. 712 pages, fully illustrated. \$2.00 postpaid.
- ☐ WINTERING BEES. A digest of all the information on the subject. Thoroughly modern and practical. Price 10 cts.
- ☐ THE BUCKEYE HIVE, or the management of bees in double-walled hives. Will interest the amateur especially. Illustrated. Price 10 cents.
- ☐ SWEET-CLOVER, the all-around forage crop. Just off the press. Investigate this astonishing plant. Free.
- ☐ ADVANCED BEE CULTURE. A summary of the best ideas of experts in apiculture. The book is beautifully printed and bound. 205 pages. Cloth. \$1.00 postpaid.

Be sure that the following coupon is carefully filled out.

The A. I. Root Company, Medina, Ohio.
Please send me the items checked above.

I enclose \$.....to cover the cost.

Name

Street Address or R. F. D.....

Town

State

SPECIAL BARGAINS

In rearranging our stock we find a number of items no longer listed in our catalog, which some of our readers may be glad to get at the bargain prices at which we offer them to reduce stock or close out entirely. We list a number of these specials on this page, and may add others later as these are disposed of.

HIVE-HANDLES.

We have a surplus stock of handhole cleats such as we formerly included with all dovetailed hives, and which have been listed at 75 cts. for 100, and will dispose of them to those who want them at 25 cts. per 100; \$2.00 per 1000.

OLD-STYLE DOVETAILED CHAFF HIVES WITH BOTTOM TO NAIL FAST.

Of these old-style chaff hives we have a number of both 8 and 10 frame packed single and 5 in a package, which we offer, to close out, as follows: YW 5/8, one story, with frames, eight frame; 8 packages, one hive each, at \$1.75, and 12 packages, five hives each, at \$8.00. The same in 10-frame size, 2 packages, one hive each, at \$1.85, and 3 packages, five hives each, at \$8.50.

NO. 2 OR B GRADE HOFFMAN FRAMES.

In culling over the material cut into Hoffman frames, we find pieces with slight defects which we do not want to put into perfect stock, but which are usable, and too good to throw into the furnace for fuel. We have accumulated some stock of such frames, which are packed 100 in a box, and offer them at \$2.25 per 100; \$10.00 per 500. These are a bargain at the price, to one who is not too particular as to what he uses.

METAL SPACERS SLIGHTLY DEFECTIVE.

In making the metal spacers for the metal-spaced frames there are a percentage which come out either sheared a little scant on one side, or with slight breaks in the tin where it is drawn up into the spacing-boss. These are hardly passable as perfect stock, but in actual use they will answer every purpose as a spacer. Rather than throw these into the scrap we will offer them while they last, including nails to nail them on, at 20 cts. per 100; \$1.80 per 1000. Transportation charges extra.

1 1/4 H. P. SIXTY-SPEED ENGINE.

We have in stock two of the engines we formerly listed as sixty speed before adopting the Busy Bee engine. These are mounted on wheels, and have a counter shaft by means of which 60 different speeds can be obtained by the various changes of pulley sizes on the counter. This engine sold for \$60.00. We offer these to close out at \$45.00 each.

WHEELBARROW WHEELS.

We have a number of extra steel wheels for wheelbarrows, which we offer at a special price of \$1.25 each, or including a pair of springs with bearings, for \$2.00. These wheels are 20 inches in diameter, with 1 1/2-inch tire, and solid cast hub holding spokes and axle in place. These wheels regularly sell at \$1.75, and springs at 50 cts. each.

SUPERS FOR EXTRACTING OR CHUNK HONEY.

We are offering, while they last, the following bargains in nailed supers for extracted honey. Some have been slightly used, and are in good condition. Prices f. o. b. Medina.

200 D9/10, nailed and painted, with top and bottom starters, nine frames in each, new. Sell new for \$1.20; offered at \$6.00 for 10; \$55.00 per 100.

410 D8/10, nailed, and some painted two coats, some one coat; 273 not painted. Sell new for 90 cts.; offered at \$5.00 for 10; \$45.00 per 100.

180 D10 supers, no paint. Sell new for 85 cts.; offered at \$4.50 per 10; \$40.00 per 100.

The first two lots are the 5 1/2-inch supers with hanger cleats and shallow Danz. frames. The last lot are the same depth supers with shallow Hoffman frames hanging in rabbeted ends. Either style may be used for extracting or divisible brood-chambers. The price at which we offer them all nailed up is much below the regular price, of same shipped in flat.

ALEXANDER FEEDERS FOR EIGHT-FRAME HIVES.

The Alexander feeder as we now make it is adapted to either eight or ten frame hives. Formerly we made a shorter length for the eight frame than for the ten-frame hive. In cleaning up old stock we find 300 of these eight-frame feeders which we offer, to close out, at half regular prices—viz., 15 cts. each; \$1.35 for 10; \$11.00 per 100; \$30.00 for the lot.

TIN COMB-BUCKETS.

While these are listed in the catalog in one line at \$1.50 each, their convenience in carrying combs to the extractor shut up from robbers is not set forth. We have a surplus stock, and offer them, to reduce the number on hand, at \$1.25 each. You can place four Hoffman frames or five non-spaced frames of Langstroth size in each bucket.

JONES HONEY-KNIVES.

This is a form of honey-knife used largely in Canada, and preferred to the Bingham by those who have tried it. The blade is 1 1/2 inches wide, and a flat V or triangular shape. We had a lot made to supply a call we had, and still have in stock 28 of them. We offer them at 75 cts. each. Mailed as a pound parcel when packed.

SHIPPING-CASES FOR 12 AND 24 SECTIONS.

When we discontinued listing shipping-cases to hold 12 sections we still had quite a stock of various styles on hand, many of which are still in stock. We have also some of the older styles of cases for 24 sections of various sizes. We offer these various cases to close out at the following bargain prices. Here is an opportunity to lay in a stock of cases preparatory to the honey crop near at hand at very low prices. None of these cases, except as noted, are large enough to take sections with cartons or corrugated liners, except the bottom sheet. 12-lb. 2 or 3 row cases with 2 and 3 inch glass for the 4 1/4 x 1 1/2, 4 1/4 x 1 1/2, 4x5x1 1/2 sections, packed 50 in a crate at \$4.00 a crate; packed 10 in a crate at 85 cts. a crate. A few crates of cases for 16 sections 4 1/4 x 1 1/2 at \$4.50 per crate of 50 or 95 cts. per crate of 10. A few crates of cases for 24 sections, 4 1/4 x 1 1/2, 4 1/4 x 1 1/2, and 4x5x1 1/2 at \$8.00 per crate of 50; \$4.00 per crate of 25, or \$1.70 per crate of 10. The 12-lb. safety cases, which we no longer list with safety cartons, and 2-inch glass for 4 1/4 x 1 1/2, 4 1/4 x 1 1/2, and 4x5x1 1/2 sections, per crate of 10, \$1.20; per crate of 25, \$3.00. Without cartons, but including corrugated liners and glass, \$4.50 per crate of 50.

NO. 2 OR B GRADE SECTIONS.

We have a surplus stock of B grade sections in all the commonly used sizes and styles, and are behind on orders for No. 1 or A grade in some kinds. To insure prompt shipment it may be advisable to order B grades if you can use that grade. In beeway style the B grade costs 50 cts. per 1000 less than A grade, while in the plain or no-beeway styles the reduction for B grade is 75 cts. per 1000. The loss from unusable sections in B grade is very little more than in the A grade. Try them if you have not done so.

SWEET-CLOVER SEED.

We have a good supply of very choice hulled white-sweet-clover seed scarified for quick germination, requiring only 10 lbs. per acre for a good stand. We offer this for a short time to reduce stock at \$18.00 per 100 lbs. Now is the right time for sowing with a unseed crop to produce hay or bloom with seed next year. We have also choice hulled yellow which we will sell at \$15.00 per 100 lbs. A thousand pounds of hulled white for shipment direct from Des Moines, Iowa, not scarified, offered at \$15.00 per 100 for prompt acceptance.

HULLED YELLOW ANNUAL SWEET CLOVER.

This makes an excellent mulch crop in orchards, and at the same time helps to enrich the soil. It will bloom in 60 to 90 days after seeding. We have a surplus stock of seed which we are offering at \$4.00 per 100 lbs.; 25 lbs. for \$1.25; 60 cts. for 10 lbs., bag included to ship in.

THE A. I. ROOT COMPANY, MEDINA, OHIO.



Beauty PATTERN

Twenty-five Cents for New Subscription to Gleanings Six Months and Premium Pattern

Select any Pattern as premium, sending 25 cents in stamps for a new six-months' subscription to **GLEANINGS IN BEE CULTURE**. Be sure to give the pattern number and size desired, and the complete address of the new subscriber whose order you send.

Canadian postage, 15c extra;

Foreign postage, 30c extra.

Selling price of Patterns, 10 cents each.

The A. I. Root Company
Medina, Ohio



1694.—Ladies' Skirt. Cut in 7 sizes: 22, 24, 26, 28, 30, 32, and 34 inches waist measure. It requires $3\frac{1}{4}$ yards of 44-inch material for a 24-inch size. The skirt measures 3 1-3 yards at the foot. Price, 10 cents.

1710.—Girls' Apron. Cut in 5 sizes: 2, 4, 6, 8, and 10 years. It requires $2\frac{1}{4}$ yards of 36-inch material for a six-year size. Price, 10 cents.

1720.—Ladies' Dress. Cut in 6 sizes: 34, 36, 38, 40, 42, and 44 inches bust measure. Size 36 will require 6 yards of 44-inch material for a 36-inch size. The skirt measures about 3 1-3 yards at the foot. Price 10 cents.

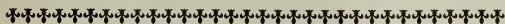
1716.—Ladies' Kimono. Cut in 3 sizes: Small, medium, and large. It requires $5\frac{1}{2}$ yards of 36-inch material for a medium size. Price 10 cents.

1702.—Girls' Dress. Cut in 4 sizes: 6, 8, 10, and 12 years. It requires $1\frac{1}{2}$ yards of 27-inch material for the gümpe, and $3\frac{3}{4}$ yards for the dress, for an 8-year size. Price, 10 cents.

1721.—Girls' Dress. Cut in 4 sizes: 4, 6, 8, and 10 years. It requires 3 yards of 44-inch material for an 8-year size. Price 10 cents.

1706.—Dress for misses and small women. Cut in 3 sizes: 16, 18, and 20 years. To make as illustrated will require $4\frac{1}{2}$ yards of 44-inch material for full portions of skirt, vest, collar, sleeve extension and skirt yoke, and $3\frac{3}{4}$ yards for panels, sleeves, waist portions and drapery for an 18-year size. The skirt measures 3 1-3 yards at the foot. Price 10 cents.

1717.—Ladies' Dress. Cut in six sizes: 32, 34, 36, 38, 40, and 42 inches bust measure. It requires 6 yards of 44-inch material for a 36-inch size. The skirt measures about 3 1-3 yards at the foot. Price 10 cents.



HONEY - CANS

We have made especial efforts this season to supply our patrons with cans and cases of the finest quality, and we have now in our warehouse a complete stock ready for immediate shipment to you.

There is much satisfaction in knowing that there is a dependable source of supply so near to all Texas Beekeepers, and others in the great Southwest. Experience has taught us to anticipate properly the needs of our patrons, and we have as yet failed to fall down at a critical time. Sometimes we feel that it is not wise for Beekeepers to trust entirely to the supply house for eleventh-hour assistance, but we concentrate our energies, nevertheless, on complete preparation, and when you are ready we are. Write us for prices.

Weed's New Process Comb Foundation

We have made extensive improvements in our comb-foundation factory this season at a great expense, and are now operating day and night under the supervision of a man direct from the A. I. Root Company, who has had many years of experience in the manufacture of this product. When placing your order with us you are assured of receiving Comb Foundation of unexcelled quality.

A full line of Root's Beekeepers' Supplies on hand at all times ready for immediate shipment.

Toepperwein & Mayfield Co.

Nolan and Cherry Sts.

San Antonio, Texas